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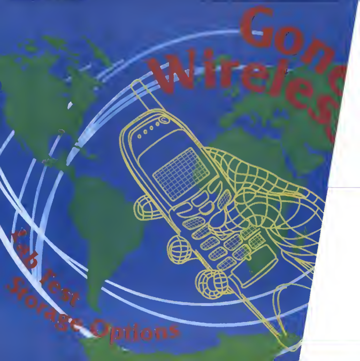

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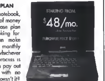

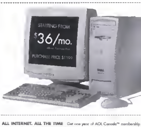

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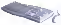

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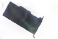

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Why wireless?

When we were preparing the annual editorial calendar for *The Computer Paper* last year, we figured that 2001 could turn out to be the Year of Wireless Computing. A lot has happened or is about to happen to confirm this. But a lot still has to happen before we start taking wireless for granted as a seamless part of the digital communications infrastructure.

Wireless is the big buzzword that everyone seems to be slapping onto some product or service these days. It can be confusing, but if you look at the way wireless affects us as individual technology users, the developments fall naturally into three domains: personal area networking, local area networking, and wide area networking.

Wireless personal area networking pretty much means Bluetooth these days. We saw one of the first demonstrations of Bluetooth at PC Expo in New York last year (a digital camera passing an image to a notebook computer via two cellular phones), but products have been slow in reaching the market.

Its original supporters (Ericsson, IBM, Intel, Nokia, and Toshiba were the founding members of the Bluetooth Special Interest Group) saw Bluetooth as a cable replacement technology. Any situation that involved connecting two digital devices together with a cable—computer to printer or other peripheral, Palm to desktop, cellular phone to PDA, headphone to music source—would enter the wireless age thanks to Bluetooth.

The radio frequency-based technology will cover—and perhaps improve on—some of the same territory now occupied by the infrared standard IrDA. Bluetooth has a wider range that is conservatively set at 10 m (32.8 ft.), although some developers claim 100 m (328 ft.) is possible.

But does anyone use IrDA these days, and will anyone use Bluetooth in the future? Only a few of my tech centric associates actually use infrared to squirt data between PDA and computer or between computer and printer, for example. I have heard of an enclave of Palm users who have software that turns a Palm device into a universal infrared remote control for their stereos, TVs, VCR,s etc. One of the issues here is the limited range and line of site requirements of infrared. Adding Bluetooth to Palms and TVs would enhance this kind of functionality, but the user base doesn't add up to a strong business case.

> But does anyone use IrDA these days, and will anyone use Bluetooth in the future? Only a few of my tech-centric associates actually use infrared to squirt data between PDA and computer or between computer and printer, for example.

Moving from personal to local area networking, the situation becomes clearer, with 802.11b on its way to becoming everybody's no-muss, no-fuss solution. A number of manufacturers have developed combo products that integrate a wireless base station, Ethernet switch or hub, and high speed Internet sharing/DHCP server into a single device. Anyone at home or in a small office with an intermediate level of technical knowledge can set up one of these wireless LAN (local area network) boxes.

Business travellers will find a few airports now offer wireless Internet access, where you can set up an account and buy or rent an 802.11 card for your notebook computer. Wireless access points are installed at various points so most public areas would have wireless coverage.

What's so great about a wireless LAN? Part of that answer depends on whether or not you subscribe to the notion that "the network is the computer." If you've come to appreciate or rely on networked resources, including an always-on connection to the Internet, you understand the benefits of a LAN.

Wireless adds the ability to roam throughout the facility while still connected.

For example, I sit at a desk all day. If I want to do some work at home, I appreciate the fact that my wireless home LAN allows me to burn through email or do some research on the Internet while parked comfortably on the couch. If I wanted to mosey over to the coffee shop with my notebook, however, the network connection would be severed. The reality of the LAN, wireless or wired, is that it is limited to a locale.

To achieve true wide area network (WAN) access, you'll have to look to the telecommunications carriers for a solution, and this is the third component of the wireless discussion. The chant here is 3G (which is shorthand for third generation cellular technology). The promise is communication rates of 150 to 380Kbps in the short term, and perhaps 1.5-2.0 Mbps eventually, plus always on access. This is serious bandwidth, surpassing 56Kbps landline modems at the low end and residential "one meg" high speed DSL at the upper end.

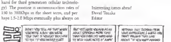
In Canada, all of the cellular phone companies are racing to 3G, as are carriers around the globe. So far, we have glimmers of demonstration projects, like Bell Mobility's testing of packet video content that can be accessed on Web-smart cell phones.

But for the most part, and until 3G becomes a reality, wireless WAN is choked at 14.4Kbps or less using techniques that mimic dial-in access, where a cellular phone is put into service as a wireless modem. Likewise, always on services are limited to relatively slow connections. The best examples are the enhanced two way pagers and pager PDA hybrids like the RIM BlackBerry. They are ready to send or receive email, or to go onto the Internet without the intermediate step of dialling into a service provider.

Offsetting the slow datacomm speeds is the fact that these are transmitting primarily plain text, and without bandwidth hogging graphics, responsiveness is actually not bad.

In the mean time, we'll see lots of mixing and matching of wireless. For example, Bluetooth has been discussed as a LAN solution, and there are some attempts to blanket large areas with 802.11b to create a wireless WAN. No gaps.

Interesting times ahead.
David Tanaka
Editor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YOUR POINT?
NOTHING. BUT JUDGING FROM YOUR EXPRESSION, I GUESS YOU DIDN'T BELIEVE THAT LINE ABOUT "IF YOU KEEP MAKING THAT FACE, IT'LL STAY THAT WAY," EITHER.

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Correction acknowledged

As one of those who wrote to take you to task for February's review of AMD versus Pentium systems, I would like to thank you for setting the record straight.

Those of us who have been closely following recent developments in the "processor wars" know that at present AMD offers far superior value for our computing buck.

Hopefully Intel will get back on track, because strong competition benefits the consumer.

In the meantime, it seems to me that anyone who buys a Pentium 4 has more money [illegible] the P4 is [illegible] remedy this.)

Bryan Johnson

I was slightly amused as I read the March "Letter From the Editor" arguing for the continued central role of the personal computer in computing. Half way through I was thinking, "I wonder if he has ever tried a BlackBerry email/Web browser pager."

Behold! He has. Still he wrote what he did!

My work provided handheld accounts for at least 50 percent of my Internet interactions. At home, my family has two PCs, a Linux server, and the for work primarily lap- [illegible] the basement computer [illegible] the time to reconnect it [illegible] (bigger cable modem).

Funny, the kids will barely touch it now. It's connectedness that matters to my family and any reasonable PC suffices.

It is also interesting to me that our non-connected friends and associates clamour not to get connected. In my opinion, they don't know what they are missing, or like my family, they would be clamouring to get online. But I asked myself what the clamouring was all about.

It seems the ability to "explore new things" that is the magnet. Kind of like the attraction [illegible] Star Trek had for so many of [illegible]

Pete Sherwood

Give your readers some respect

The headline you placed over the letter from David MacAdam in your March 2001 Letters column was unnecessarily snide. (So much to rant about, so little time.) It is not your business to deride your readers, even if you disagree with what they have to say. In your reply, you attempted to dismiss his concerns but only ended up proving one of his points. You wrote: "We have also covered economical Internet sharing... most recently in our January 1999 issue."

Newsflash. January 1999 was over two years ago. That hardly qualifies as recent in the computer industry.

John MacDonnell

More on high-speed Internet debate

I found the article "Testing and tweaking broadband" in your March issue to be very interesting, but as with many others I've seen on the subject, it missed an important component that should be part of any decision.

I travel occasionally with my notebook computer and need a dial up connection in the hotel. When I checked a few months ago, Sympatico offered 10 hours of free dial-up service across Canada, or at least up to the B.C. border. The @Home service required signing up for a $15 per month service with a per minute connection charge.

Would you have made the same decision if you travelled with a notebook?

Marvin D. Silbert

Capable inexpensive graphics overlooked

I have one comment regarding Rod Lamirand's "Dipping into graphics" in your March issue. While it's a good review of some tools available on the market, I was really surprised that you didn't even mention Jasc PaintShop Pro—I even went through the article all over again, just to make sure I didn't miss it.

I am pretty sure anyone who did a little research on the subject, knows about it, but for those who don't—you gotta check it out. I mean it. This little gem has its reputation of "poor man's Photoshop" for a reason. For US$99 (download) or US$109 (boxed) one will get a complete set of tools for almost any kind of work imaginable. PaintShop Pro has features which could be found in far more expensive packages like Photoshop and PhotoPaint: layers, vector objects (including editable text), masks, numerous special effects, artistic brushes, multiple undos, vast array of supported file formats—all put together in a simple and intuitive interface.

Whatever your level of expertise is, it provides you with tools from simple one-click operations up to complete precise control over all parameters of your image.

Add to it compatibility with Photoshop plugins, included animation package, and a sheer volume of free tutorials available on the Web, and you'll have to try really hard to find someone who wouldn't be impressed with it. And, by the way, Paint Shop Pro is available for trial download from http://www.jasc.com.

TCP *replies. Due to a mix-up in assignments, the Jasc product fell between the cracks. But, we are very familiar with PaintShop Pro, and agree with your assessment—professional-level features at a mid-range price. We'll try to carry a review of this product in a future issue.* ❑

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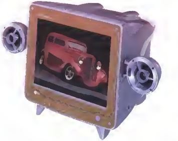

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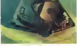

Toshiba America Electronics Components' storage device division has unveiled its newest family of embedded compact 1.8-inch hard disk drives (HDD). Toshiba says these drives—available in 5 GB and 10 GB capacities—will provide higher capacity storage options for a range of notebook PC and non-PC applications.

The company says the combination of high-capacity, high performance, small footprint, and greater shock resistance makes its new drives perfectly suited for notebook PCs, as well as providing a cost-effective storage solution for handheld mobile terminals, wearable computers, digital video cameras, and car navigation systems especially when compared to traditional storage technologies such as Flash and smaller footprint HDDs.

The new 5 GB and 10 GB drives which are built on the technology platform of Toshiba's 2.5-inch HDD families have a 5.4x7.85 cm footprint and weigh in at 50 g and 60 g, respectively. Both drives are ATA-5 compliant to support high transfer rates of 66.7 MBps and can withstand operational shock of up to 200g and non operating shock of up to 1 kg, according to Toshiba. They begin shipping in April.

—*TCP Staff*

USB cable links PCs and Macs

Lex Tec (http://www.lextec.com) and ATEN Technology (http://www.aten-usa.com) have announced the release of SmartLink, an easy-to-use plug-and-play file transfer solution for USB-enabled PCs and Macs. The SmartLink UN 161 offers a quick and easy solution for host-to-host file transfers via USB ports at speeds equivalent to 10-BaseT Ethernet.

The cable supports Windows 95/98/2000 and Mac OS 8.6 or greater, and provides peer-to-peer (PC-PC, Mac-PC, or Mac-Mac) file transfer at speeds of up to 6 Mbps via USB interface and software utility on CD-ROM (included). The device offers a double data buffer that supports two-way data transfer as well as suspend and resume power management. It can be powered from either USB port.

The Smartlink cable is expected to sell in Canada for $74

—*TCP Staff*

Google offers enhanced applet

LONDON, England—One of the most popular search engines on the Web, Google (http://www.google.com), has enhanced its downloadable applet so users can prepare their searches from within their existing Web browser, before they go online. The applet, which dovetails in with Microsoft Internet Explorer creates a number of useful functions for the serious Web searcher

—*Newsbytes*

Intel debuts 1 GHz mobile processor

Intel Corp. has built the first 1 GHz microprocessor for notebook computers. The new Pentium III employs Intel's Speed Step technology which slows the chip during undemanding computing tasks to save power and cut down on heat.

Previously, chips of this speed were not available for notebook PCs because the higher processing power required more electricity which notebook batteries couldn't handle. As well, more powerful chips tend to run hotter and required a hefty fan—which, again, would quickly drain notebook batteries.

With Speed Step, the processor runs at an optimal level for a given application—at max the chip runs at 1 GHz and 1.7 volts, in "battery optimized mode" it scales back to 700 MHz and 1.35 volts.

The new Pentium III is built on 0.18 micron technology and features a 100 MHz system bus and 256 KB transfer cache. The first systems to incorporate the new processor will be Compaq's Presario 1800, Armada E500, and Armada M700 notebooks. Dell, Gateway, Hewlett Packard, and others will also be building notebooks featuring the new chip.

Industry observers have criticized Intel for missing the mark with its processors, persistently pushing higher clock speeds and ignoring the need for low power consumption chips. For its part Intel has said Speed Step proves them wrong and every computer user would like more power, provided it doesn't come at the cost of battery life.

—*CanadaComputes.com*

Canadian heritage online

Canada finally has a museum that accounts for our vast landmass and the inherent regionalism it creates. In late March, the Department of Canadian Heritage unveiled the Virtual Museum of Canada (http://virtualmuseum.ca/), a Web-accessible display of regional work.

Janet Brooke, president of the Canadian Museum Association, said it's "a powerful tool to reach beyond the confines of geography."

The Web site currently features a handful of exhibits, a fair number of which include Windows Media Player, RealPlayer, or QuickTime displays. This initiative includes more than 600 museums from across Canada.

The site features an extensive image gallery, where you'll find a range of collections, from paintings by the Group of Seven and Emily Carr to images of ancient aboriginal toys, methods of transportation, and clothes, and natural science photography.

—*CanadaComputes.com*

MPEG-4 media player demonstrated

SAN JOSE, Calif.—The Flavor Player, purported to be the world's first MPEG-4 media player, made its public debut in March at the Digital Hollywood conference in San Jose, Calif. Flavor Software (http://www.flavorsoftware.com), the product's manufacturer, said it combines a media player, DVD multimedia, Flash animation and an Internet browser.

One MP4 file can contain audio, images, video and text, the company said. Hari Kalva, vice president of engineering for Flavor Software, said the Flavor Player does not directly compete with other media players.

"We have taken many applications and combined them," Kalva said. "To use the complete set of features, people will need higher bandwidth. However, people with a [dial up] modem can use the Flavor Player to enhance MP3 files. They can add photographs, band interviews, lyrics or their comments to create an MP4 file." The MP4 file is then stored on the user's PC, he added.

The company said the Flavor Player includes secure digital rights management and is designed to work with more than just audio and recorded music. Suggested uses include food programs on television packaging recipes and links to online vendors who sell special ingredients, or sports leagues combining downloaded video with streaming, real-time statistics.

At press time, a version of the player, Mild Flavor 6.0, and four MP4 sample files were available for download. The player requires a PC running Windows 95 or higher (sorry, no Mac support currently), at least 32 MB RAM, and Internet Explorer 4.01 or higher.

—*Newsbytes*

Alias|Wavefront ships Maya 3 for Linux

Alias|Wavefront (http://www.aliaswavefront.com), an SGI company, has announced that it has successfully ported its entire suite of Maya 3D software products to the Red Hat Linux operating system.

The products—Maya Builder, Maya Complete, and Maya Unlimited for Red Hat Linux 6.2 and higher—are expected to have started shipping by press time.

Alias|Wavefront says numerous requests for a Linux version of Maya from leaders in the game development, film, and visual effects communities served as the incentive for the port.

"Alias|Wavefront is responding to the needs of its customers by making Maya available on their preferred graphics hardware platforms," states Chris Ford, senior Maya Product Manager for Alias|Wavefront. "With Maya for Linux, IRIX, WindowsNT/Windows 2000, and soon Mac OS X, our users have maximum flexibility to choose the hardware and software configurations that are most appropriate to their creative and business requirements."

Maya 3 for Red Hat Linux 6.2 is available at the same price as Maya 3 for the IRIX and Windows NT and 2000 Professional platforms, starting with Maya Builder at US$2,695.

Alias|Wavefront says the core features of the Linux version of Maya will be the same as those in Maya for other platforms.

—*TCP Staff*

VeriSign adding multilingual characters

MOUNTAIN VIEW, Calif.—VeriSign Inc., owners of Internet domain registry Network Solutions, says it is again increasing the number of non-English characters supported by its fledgling system for processing multilingual Net addresses.

The Mountain View, Calif., company said that in early April its multilingual domain name test bed will begin to accept Internet names using all characters represented by the Unicode standard. VeriSign said the languages most in demand that are awaiting additional Unicode support include Arabic, Hebrew, and Thai.

The company launched its testbed for non-English character domain registrations last fall, adding support for characters that allowed

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Asus A[illegible] DDR 266MHz FSB
128MB DDR RAM (PC2100)
1.44MB Floppy Drive
40GB Ultra ATA 100 7200RPM Hard Drive
Ultra ATA 100 Cont. w/2x16550 Serial
1xBi-Directional Parallel, 4xUSB Port
AGP MSI 8815 Pro GeForce 2 Pro TVout w/64MB DDR
Creative Labs Sound Blaster Live! Value Card
AOpen 12x Speed UDMA DVD ROM
Altec Lansing ACS 45.2 Subwoofer Speaker
Samsung 753DF 17" .20mmDP NI SVGA Monitor
ATX Mid Tower Case with CSA 300W Power Supply
107 keys Windows 98 Keyboard PS/2 Mouse
1 Year Parts & Service Warranty

GeForce2 Pro
DDR266

Athlon K7-1GHz	$1,925
Athlon K7-1.133GHz	$1,950
Athlon K7-1.2Hz	$2,000
Athlon K7-1.333GHz	$2,045

Pentium III ~ MediaMax Pro

M[illegible] Apollo Pro 133A 1xAGP Board
Internal L2 Cache
128MB 168 Pin SDRAM (PC133MHz)
1.44MB Floppy Drive
20GB Ultra ATA100 IDE Hard Drive
Ultra ATA100 Cont. w/2x16550 Serial
1xBi Directional Parallel, 2xUSB Port
AGP nVidia TNT2 M64 3D Card with 32MB
On Board AC 97 3D Sound Card
52x Speed UDMA CD-ROM
MLI 740A Sub-Woofer Speaker System
KDS 17" .27mmDP NI SVGA Monitor
ATX Mid Tower Case with CSA Power Supply
107 keys Windows 98 Keyboard, PS/2 Mouse
2 Year Parts & Service Warranty

PC133

PIII 733MHz 256KB L2	$1,015
PIII 800MHz 256KB L2	$1,085
PIII 866MHz 256KB L2	$1,120

LINKSYS

ProConnect KVM 2 Port Switch Model, PS2KVM2	$74
ProConnect KVM 4 Port Switch Model PS2KVM4	$125

IDE Hard Drive Special !!

IDE

10GB	$126
20GB	$144
30GB	$165
40GB	$184

HARD DRIVE

Promise ATA/66 Controller	$30.00
Promise ATA/100 Controller	$47.00

PROMISE TECHNOLOGY, INC.

Power Station

Impression VIA Apollo Pro 133 AGP Main Board
128MB 168 Pin High Performance SDRAM(PC133MHz)
1.44MB Floppy Drive
10GB ATA100 IDE Hard Drive
Ultra DMA66 Cont. w/2x16550 Serial
1xBi Directional Parallel, 2xUSB Port
AGP nVidia TNT Vanta 3D Card 16MB SDRAM
On Board AC-97 Sound Card
52x Speed UDMA CD-ROM Speakers
15" Non-Int Low Rad. SVGA Monitor PnP
ATX Mid-Tower Case with CSA Power Supply
107 keys Windows 98 Keyboard PS/2 Mouse
1 Year Parts & Service Warranty

NVIDIA RIVA TNT

CELERON

700MHz w/128KB L2	$795
733MHz w/128KB L2	$800
766MHz w/128KB L2	$840
800MHz w/128KB L2	$855

Pentium III ~ Media Max

Intel Pentium III Processor/133MHz Bus
MSI 815 Pro (Solano-2) 133MHz 4xAGP Main Board
128MB 168 Pin SDRAM (PC133Mhz)
1.44MB Floppy Drive
20GB ATA100 IDE Hard Drive
Ultra ATA100 Controller w/ 2x16550 Serial
1xBi Directional Parallel, 2xUSB Port
AGP 3D Graphics on Die, Intel 754 Core
AC-97 v2.1 Compliant Audio
52x Speed UDMA CD-ROM Speakers
ATX Mid-Tower Case with CSA Power Supply
107 keys Win98 Keyboard PS/2 Mouse
2 Year Parts & Service Warranty

PC133

Pentium III

PIII 733MHz w/256KB L2	$915
PIII 800MHz w/256KB L2	$965
PIII 866MHz w/256KB L2	$1020

AMD SuperStation

MicroStar K7M133 Athlon/Duron VIA 133 Main Board
128MB 168 Pin High Performance SDRAM (PC133MHz)
1.44MB Floppy Drive
20GB Ultra ATA100 5400RPM Hard Drive
Ultra ATA-100 IDE Controller
2 x 16550 Serial, 1 Parallel & 2xUSB Port
On Board Savage 4 3D Graphics Accelerator
On Board AC-97 2.0 3D Audio Sound
52x Speed UDMA CD-ROM Speakers
KDS 17" .27mmDP NI SVGA Monitor
ATX Mid Tower Case with CSA Power Supply
107-keys Win98 Keyboard, PS/2 Mouse
1 Year Parts & Service Warranty

AMD Duron

AMD Duron

Duron - 750MHz	$ 840
Duron - 800MHz	$ 865
Duron - 850MHz	$ 895
Duron - 900MHz	$ 925

Video Graphics Adapters

ATI All-in-Wonder 128 Pro AGP Card 16MB/32MB	[illegible]
ATI Xpert 98 8MB/Xpert 2000 32MB AGP Card	[illegible]
ATI Rage Fury Pro (VIVO) 32MB/Fury Maxx 64MB AGP	[illegible]
ATI Radeon VE Dual Display 32MB AGP	$145.00
ATI Radeon AGP 32MB/64MB VIVO DDR	[illegible]
ATI Radeon All-in-Wonder AGP Card 32MB	[illegible]
ATI TV Wonder VE NTSC/TV Wonder Card (NTSC)	[illegible]
ASUS V7100 GeForce 2 MX AGP Pure 16MB/32MB	[illegible]
ASUS V7100 GeForce 2 MX AGP 32MB TwinView	[illegible]
ASUS V7700 GeForce 2 GTS Pure 32/64MB DDR	[illegible]
ASUS V7700 GeForce 2 GTS Deluxe 32/64MB DDR	[illegible]
ELSA Gladiac 920 GeForce 2 64MB AGP	[illegible]
Matrox Millennium G450 16/32MB DDR Dual Display	[illegible]
Matrox Marvel G450eTV 32MB DDR TV Out	[illegible]
MicroStar 8817 GeForce 2 MX AGP Pure 32MB	[illegible]
MicroStar 8812 GeForce 2 GTS 32MB DDR TV-Out	[illegible]
MicroStar 8815Pro GeForce 2 Pro 64MB DDR TV-Out	[illegible]
nVIDIA TNT Vanta 16MB/TNT2 M64 32MB AGP Card	[illegible]
nVIDIA GeForce 256 32M/GeForce 2 MX 32MB TVOut	[illegible]

Monitors

Envision 15" NI L/R (1024x768 .28mmDP)	[illegible]
Envision EF1785 17" NI L/R (1600x1200 .26mmDP)	[illegible]
Envision E1900 19" NI L/R (1600x1200 .26mmDP)	[illegible]
KDS VS7i 17" NI L/R (1280x1024 .27mmDP)	[illegible]
KDS VS-190i 19" NI L/R (1600x1200 .27mmDP)	[illegible]
NEC AS500/AS700 15"/17" .28mmDP DotTrio	$225/290
NEC FE700/700M 17" .25mmDP Flat Display	[illegible]
Sony E100 15" NI L/R (1600x1024 .24mmDP) FD	[illegible]
Sony E200 17" NI L/R (1280x1024 .24mmDP) FD	[illegible]
Sony E400 19" [illegible]	[illegible]
Sony G500 21" [illegible]	[illegible]
Sony G200 17" NI L/R (1600x1200 .24mmDP) FD	[illegible]
Samsung 550S 15" NI L/R (1024x768 .28mmDP)	[illegible]
Samsung 700IFT 17" NI L/R (1600x1200 .20mmDP)	[illegible]
Samsung 950P 19" NI L/R (1600x1200 .26mmDP)	[illegible]
Samsung 1100P+ 21" NI L/R (1600x1440 .25mmDP)	[illegible]
Samsung 1200NF 22" NI L/R (2048x1536 .26mmDP)	[illegible]

HD/FD Controllers

[illegible]	[illegible]
Adaptec 2906/2930U PCI SCSI Controller	[illegible]
Adaptec 29160/39160 PCI Ultra 160 SCSI	[illegible]
Adaptec 2100S/3200S RAID Ultra 160 SCSI	[illegible]
Adaptec 3400S RAID Ultra 160 SCSI 4 Channel	[illegible]
Promise Ultra66/FastTrak 66 PCI Controller	[illegible]
Promise Ultra100/FastTrak 100 PCI Controller	[illegible]
Promise Ultra66 RAID 5/Ultra 100 RAID 5 Cont.	[illegible]

Keyboards & Cases

[illegible] Enhanced 104 Keys	[illegible]
M-Tek Windows 98/Internet Keyboard	[illegible]
Logitech Deluxe/Internet Keyboard	[illegible]
Logitech Cordless Touch Keyboard	[illegible]
Logitech Cordless Freedom/Pro Keyboard	[illegible]
Microsoft Natural Elite/Internet Keyboard (OEM)	[illegible]
17/19" ATX Mid Size Tower w/ CSA Power Supply	[illegible]
23" ATX Tower with 250W CSA Power Supply	[illegible]

Floppy & Hard Drives

Panasonic 1.44MB Floppy Drive	[illegible]
Panasonic LS-120 120MB Floppy Drive	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Motherboards

Intel STL2 Dual Pentium III PGA Server Board	[illegible]
Intel D850GB P4 Socket 423 RAMBUS Board	[illegible]
Abit SA6R i815E Socket 370 Board RAID	[illegible]
Abit KT7/KT7-RAID KT133 Socket A Board	[illegible]
Abit VL6 VIA Apollo Pro 133 Pentium III Board w/Sound	[illegible]
Abit VP6 Dual Pentium III Socket 370 ATA 100 RAID	[illegible]
ASUS CUSL2 i815E/CUSL2-C i815EP Socket 370	[illegible]
ASUS CUV4X-C VIA Apollo Pro 133 Board	[illegible]
ASUS A7A266 ALI DDR SDRAM Athlon Board	[illegible]
ASUS A7V133 VIA KT133A 266MHz FSB [illegible] Board	[illegible]
MicroStar 815E Pro Socket 370 ATA100 Board	[illegible]
MicroStar MS-6309 VIA 168 Pentium III Board	[illegible]
MicroStar MS-6321 Pro 266 Pro P-III DDR+SDR Board	[illegible]
MicroStar MS-694D Pro Dual Socket 370 Board RAID	[illegible]
MicroStar K7M133 VIA Socket A Savage4 Video	[illegible]
MicroStar K7T Pro 2 VIA Socket A Board ATA 100	[illegible]
MicroStar K7T266 Pro KT133A DDR/RAID	[illegible]

MultiMedia

AOpen 12x10x32 Int IDE CDRW (Just Link Technology)	[illegible]
AOpen 12x Int IDE DVD Drive	[illegible]
Creative Labs Sound Blaster Ensoniq PCI/PCI 128	[illegible]
Creative Labs SB Live! MP3+ 5.1/X-Gamer 5.1	[illegible]
Creative Labs SB Live Platinum 5.1/Live Value	[illegible]
LG 52X/Creative Labs 52X IDE CD-ROM Drive	[illegible]
LG 8x8x32/LG 12x8x32 IDE CDRW	[illegible]
Panasonic 16x/Pioneer 16x IDE DVD Drive	[illegible]
Plextor 12x10x32/16x10x40 Int IDE CDRW	[illegible]
Plextor 12x10x32 Int/Ext SCSI CDRW	$401/506
Plextor 40X SCSI CD-ROM Drive	[illegible]
Yamaha [illegible] SCSI CDRW (Drive Only)	[illegible]

Modem & Mice

AOpen 56K v.90 Hardware/Win Fax Modem	[illegible]
Genius NetMouse with Magic-Button	[illegible]
Logitech FirstMouse+ OEM/Cordless Wheel	[illegible]
Logitech Wheel Mouse/MouseMan Optical	[illegible]
Logitech Cordless TrackMan Wheel/FX	[illegible]
Logitech TrackMan Marble Wheel/Marble FX	[illegible]
Logitech TrackMan Live Cordless	[illegible]
Microsoft Basic Mouse/Cordless Wheel Mouse	[illegible]
Microsoft Trackball Mouse/IntelliMouse	[illegible]
Microsoft TrackBall Optical/Explorer	[illegible]
Microsoft WheelMouse/IntelliMouse Optical	[illegible]
Microsoft Compatible Mouse PS/2	[illegible]
US Robotics 56K v.90 Int/Ext Fax Modem	[illegible]
Zoltrix 56K v.90 External Fax Modem	[illegible]

Printers/Scanners

Canon BJC-2100/[illegible]/S400 Inkjet	[illegible]
Canon S400/S600 Color Inkjet	[illegible]
Canon N650U/N1220U Scanner	[illegible]
Epson Stylus 580/777 Color Inkjet	[illegible]
Epson Stylus 780/880 Inkjet 2880x720dpi	[illegible]
Epson Stylus 980/980N Color Inkjet 2880dpi	[illegible]
Epson Stylus 1280 13"x44" Color Inkjet	[illegible]
HP 640C/840C Deskjet Color Printer	[illegible]
HP 950C/990C Deskjet Color Printer	[illegible]
HP 970Cse/990Cse Deskjet Color Printer	[illegible]
HP P1000/P1100 PhotoSmart Color Printer	[illegible]
HP 1220C/1220CPS Deskjet Color Printer	[illegible]
HP 2000 Business Inkjet Printer	[illegible]
HP 2250/2250TN Business Inkjet Printer	[illegible]
HP 1200/1220 LaserJet 15 ppm	[illegible]
HP 2200D/2200DN LaserJet 19 ppm	[illegible]

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SONY
Cisco Systems
Acer
3Com Networking Partners

MicroConcept

102 - 1245 West Broadway
Vancouver, B.C. V6H 1G7

Pentium III-Game Blaster

Intel Pentium III Processor/133MHz Bus
Asus CUSL2 i815EP 133MHz ATX Board
128MB 168 Pin SDRAM (PC133MHz)
1.44MB Floppy Drive
[illegible] ATA100 5400RPM IDE Hard Drive
Ultra ATA100 Cont. w/2x16550 Serial 1xBi-Directional Parallel 4xUSB Port
AGP [illegible] GeForce 2 MX w/32MB TV Out
Creative Labs Live! Value Card-Environmental Audio
52x Speed UDMA CD-ROM
MLI 480 Sub woofer Speaker
Samsung 750S 17" .27mm DP NI SVGA Monitor
ATX Mid-Tower Case with CSA Power Supply
107-keys Windows 98 Keyboard.PS/2 Mouse
2 Year Parts & Service Warranty

PIII 800MHz 256KB L2	$1,355
PIII 866MHz 256KB L2	$1,390
PIII 933MHz 256KB L2	$1,450
PIII 1GHz 256KB L2	$1,495

Pentium 4 Power Station

Intel Pentium 4 Processor/400MHz FSB
Intel D850GB i850 400MHz FSB ATX Board
128MB RAMBus 800MHz (3.2GB/s bandwidth)
1.44MB Floppy Drive
[illegible] ATA100 7200RPM IDE Hard Drive
Ultra ATA100 Cont. w/2x16550 Serial 1xBi-Directional Parallel 4xUSB Port
AGP nVidia GeForce 2 MX w/32MB TV Out
Creative Labs Live! Value Card Environmental
AOpen 12x Speed UDMA DVD-ROM
Altec Lansing ACS 45.2 Sub woofer Speaker
In Win S508 FX Tower Case w/300W PS
Samsung 753DF 17" .20mmDP DynaFlat Monitor
107-keys Windows 98 Keyboard.PS/2 Mouse
2 Year Parts & Service Warranty

Pentium 4	1.3GHz	$2,010
Pentium 4	1.4GHz	$2,135
Pentium 4	1.5GHz	$2,510
Pentium 4	1.7GHz	$Call

MEMORY SALE!

16MB 60ns 72-Pin EDO SIMM	$48.00
32MB 60ns 72-Pin EDO SIMM	$63.00
32MB SDRAM PC-100 compliant	$27.00
64MB SDRAM PC-100 compliant	$46.00
128MB SDRAM PC-100 compliant	$69.00
256MB SDRAM PC-100 compliant	$143.00
64MB SDRAM PC-133 compliant	$30.00
128MB SDRAM PC-133 compliant	$60.00
256MB SDRAM PC-133 compliant	$136.00
128MB ECC SDRAM PC-133 compliant	$91.00
256MB ECC SDRAM PC-133 compliant	$173.00
128MB DDR PC2100 compliant	$145.00
256MB DDR PC2100 compliant	[illegible]
128MB RAMBUS [illegible] compliant	[illegible]

Verbatim CDR Media

Verbatim 74min CDR $0.99*
Digital Media CDRW $1.29
*Minimum 10 pieces

Iomega Zip

100MB Zip Disk
$12.00

56K Modem

V.90 Internal Fax Voice Modem
$21.00

MICROCONCEPT NETWORK PRODUCTS FOR LESS !!

Novell NetWare

IntraNetWare v5.1

NetWare 5.1 Server Plus 5 User Lic.	[illegible]
NetWare 5.1 5/10 Additive Lic. Only	$1250/1785
NetWare 5.1 25/50 Additive Lic. Only	$3450/5160

Netware Small Business Suite v5

Netware Small Business v5 Server w/5 user	[illegible]
Netware Small Business v5 Connection Lic.	[illegible]

Microsoft Server

Windows NT Server v4.0 CD 5 Client/10 Client	[illegible]
Windows NT Workstation 4.0 CD	$435
Windows 2000 Server 5 Clients/10 Clients Lic.	[illegible]
Windows 2000 Advanced Server 25 Clients	[illegible]
Windows 2000 Professional	$435
Microsoft Commerce Server 2000	[illegible]
Microsoft Exchange 2000 Conferencing Server	[illegible]
Microsoft Exchange 2000 Server w/5 Clients Lic.	[illegible]
Microsoft Host Integration Server 2000	[illegible]
Microsoft Proxy Server V2.0	[illegible]
Microsoft Site Server V3.0 w/5 Clients Lic.	[illegible]
Microsoft Site Server Commerce V3.0 w/5 Clients	[illegible]
Microsoft Small Business Server 2000 w/5 Clients	[illegible]
Microsoft SQL Server 2000 w/5 Clients Lic.	[illegible]
Microsoft System Management Server v2.0 w/10 Cli	[illegible]
Microsoft Windows 2000 Terminal Server w/5 Clients	[illegible]

Network Printers

Opera M412 LEXMARK
1200dpi Image Quality
$1035.00

HP 4100 Laserjet, 1200dpi, 25ppm	[illegible]
[illegible]	[illegible]

Tape / CD ROM Drive

Hewlett Packard SureStore 24GB Int/Ext DAT Drive	[illegible]
Hewlett Packard SureStore 40GB Int/Ext DDS-4 DAT	[illegible]
[illegible]	$2798.00
[illegible]	[illegible]
[illegible]	$5858.00
[illegible]	[illegible]
[illegible]	$355/735
[illegible]	$455.00
[illegible]	$1026.00
[illegible]	$1036.00
[illegible]	[illegible]

Power Protection

APC BackUPS 300
$130.00
American Power

[illegible]	[illegible]

Cables & Jacks

Cable Tester
$78.00

Twisted Pair

[illegible]	[illegible]

Coaxial

[illegible]	[illegible]

Print Servers/USB Hub

[illegible]	$182
HP JetDirect [illegible] Ext Print Server	$205
HP JetDirect [illegible] Print Server	$595
HP JetDirect [illegible] Ext Print Server	$378
HP JetDirect [illegible] Ext Print Server	$498
HP JetDirect [illegible]	$378
HP JetDirect [illegible]	$498
HP JetDirect [illegible] USB Connectivity Card	$150
Intel NetportExpress Pro Ltd. Printer Server [illegible]	$385
Intel NetportExpress 10/100 Ext. Printer Server 1 Port	$325
Intel NetportExpress 10/100 Ext. Printer Server 3 Port	$470
[illegible]	[illegible]
Netgear PS110 10/100BT Print Server	$115
Linksys [illegible] Hub 4 Port	[illegible]
Xircom Portgear USB Hub 4 Port/7 Port	$55/58

PCMCIA Adapters

[illegible]	[illegible]

10BaseT Adapter/Hubs

[illegible]	[illegible]

Home Network/Wireless

[illegible]	[illegible]

Switches

[illegible]	[illegible]

100Mbps ~ Gigabits

3Com 3C905B TX PCI
$62.00

[illegible]	[illegible]

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Store Hours	
Mon-Fri	09:30am - 6:30pm
Sat	10:00am - 5:30pm
Sun	Closed

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- Leasing Available
- Prices Subject To Change Without Prior Notice

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DC 4800 Digital Camera $790
$150 Mail-in Rebate

Kodak MC3 Portable Multimedia Device $308

WACOM Graphire 4x5 Tablet $126

brother

MFC 9600 6in1 $980
- True 600 x 600 dpi output
- 8MB RAM • 12 PPM
- PC Fax • Colour Scanner

HL 1030 $339
- Up to 600 x 600 dpi
- 2MB RAM

HL 1240DX $475
- True 600 x 600 dpi
- 2MB RAM

HL 1250DX $560
- 1200 x 600 dpi
- 4MB RAM

BUY! NOW!

HL 1270N $755
- 1200 x 600 dpi
- 10/100BT

HL 1650 $825
- 16ppm, 2400 x 600 dpi
- 8MB RAM

HL 1670N $1018
- 16ppm, 2400 x 600 dpi
- 16MB,10/100 BaseT

CREATIVE

Video Blaster Movie Maker $285

Voice Blaster $32

Nomad Juke Box Audio Player 6GB $715

PlayWorks 2000 Digital Speaker / Sub $259

Sound Blaster Live Platinum 5.1 $269

SB Live Value OEM $68

LG 777FNW Flatron 17" $439

Thermaltake Chrome Orb For AMD Duron Socket A Processor $15

Golden Orb For Intel PC-PGA 370 CPU $15

Super Orb For AMD Duron Socket A Processor $28

Blue Orb GeForce, Geforce2, 3DFX Chip Cooler 4600RPM $15

LG Electronics

CED-8120B CD-Writer $177
- 12x8x32x CDRW
- 8MB Buffer Memory
- 110ms Access Time

100MB $66

250MB $128

Zip Cartridge not Included
Internal IDE Zip Drive
11.2Mb/sec data transfer rate, 20 times faster than floppy.

QuickCAM Pro 3000 $129
logitech
- True High Quality 640x480
- Built-in Microphone
- Professional Video Editing

AGFA

Agfa E20 Scanner $113
- 36 Bits/Pixel Color
- Optical Resolution 600x1200dpi
- USB Interface, PC & Mac

ML-4600 Laser Printer $309
- 8 Pages Per Minute
- 1200DPI / 4MB RAM
- USB & IEEE 1284

SAMSUNG

ML-6060S Laser Printer $735
- 12 Pages Per Minute
- 1000 DPI / 16MB
- USB, IEEE 1284 & 10/100BT

routers $203

$40 Mail-in Rebate

Linksys BEFSR41
Instant Broadband EtherFast Cable/DSL Router

3com

3Com 3C510 $189
- 4 10/100BaseT Ethernet Ports
- Printer Port
- Firewall-Protected Internet Access

Microsoft $82

MS Intellimouse Explorer
- New Optical Technology
- No ball to Clean
- Scroll wheel & 5 programmable buttons

adaptec $109

Fire Connect 4300
- 3 x 400Mbit/s Firewire Port
- MGI VideoWave 4 included

Disc Storage

Seagate

CHEETAH

Quantum

FUJITSU

Capacity	Model	Access	Cache	RPM	Interface	Price
9GB	ST39216W	5.8ms	2MB	7200	ULTRA 2 SCSI	$300
9GB	ST39205LW	5.2ms	4MB	10000	ULTRA 160	$335
18GB	ST318417W	8.8ms	2MB	7200	ULTRA 2 SCSI	$349
18.4GB	ST318437LW	8.8ms	2MB	7200	ULTRA 160	$365
18.4GB	ST318405LW	5.4ms	4MB	10000	ULTRA 160	$478
18.4GB	ST318451LW	3.6ms	4MB	15000	ULTRA 160	$580
36.7GB	ST336704LW	5.2ms	4MB	10000	ULTRA 160	$765
36.7GB	ST336705LW	5.4ms	4MB	10000	ULTRA 160	$810
73.4GB	ST173404LW	5.8ms	4MB	10000	ULTRA 160	$1420
181.6GB	ST1181677LW	7.4ms	4MB	7200	ULTRA 160	$2840
9.1GB	07N3220	4.9ms	4MB	10000	ULTRA 160	$360
18.3GB	07N3210	4.9ms	4MB	10000	ULTRA 160	$500
36.4GB	07N3100	8.8ms	4MB	7200	ULTRA 160	$755
36.9GB	07N3200	4.9ms	4MB	10000	ULTRA 160	$880
9.1GB	QM309100XC	8.5ms	4MB	7200	ULTRA 160	$318
9.2GB	QM309200TY	5ms	8MB	10000	ULTRA 160	$335
18.4GB	QM318300XC	8.5ms	4MB	7200	ULTRA 160	$420
18.4GB	QM318400TY	5ms	8MB	10000	ULTRA 160	$480
36.7GB	QM336700XC	8.5ms	4MB	7200	ULTRA 160	$740
36.7GB	QM336700TY	5.8ms	8MB	10000	ULTRA 160	$820
73.4GB	QM373400TY	5ms	8MB	10000	ULTRA 160	$1570
9.1GB	MAH3091MP	8.5ms	4MB	7200	ULTRA 160	$285
9.1GB	MAJ3091MP	4.7ms	4MB	10000	ULTRA 160	$310
18.2GB	MAH3182MP	8.5ms	4MB	7200	ULTRA 160	$383
18.2GB	MAJ3182MP	4.7ms	4MB	10000	ULTRA 160	$420
36.4GB	MAJ3364MP	4.7ms	4MB	10000	ULTRA 160	$790

D-Link

DWL 500 PCI Wireless 11Mbps Network Adaptor $269 Buy Now!

DWL-1000AP Wireless 11Mbps Access Point $419 Buy Now!

DWL-650 PCMCIA Wireless 11Mpbs Network Adaptor $222 Buy Now!

DI-713 Wireless 11Mbps Router & Access Point+3 Port Switch $555

DI 707 DI-707 Internet Gateway / Firewall $280

DMP CD100 MP3 Based CD Player $159

DSS 5+ 10 / 100BaseT 5 Port Switch $85

hp invent

SureStore 9510i 12x/8x/32x IDE CD Writer $257

HP8230e	4x4x6x USB External CDRW	$288
HP9150i	8x4x32x IDE Internal CDRW	$195
HP9350i	10x4x32x IDE Internal CDRW	$225
HP9600si	12x8x32x SCSI Internal CDRW	$420
HP9600se	12x8x32x SCSI External CDRW	$490
HP9710i	16x10x40x IDE Internal CDRW	$410
HP9900Ci	12x10x32x IDE Int. DVD/Combo	$480

zip

Get 100MB / 250MB Storage $12/$17

USB Port $145

ZIP 250MB Drive
USB Port $250
Parallel Port $2[illegible]

Iomega Foto Show Digital Image only $405

Jaz 2GB External Drive only $490

jaz

Get 2GB Storage for only $125

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ACS56 Digital High Power 5 pcs Gaming Speaker System	$[illegible]
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ATP5 5 pcs Speaker System with Thin Profile Design	$[illegible]
ADA300 Digital PowerCube Speaker w/Multichannel Surround	$[illegible]
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YAMAHA

YST-M[illegible] 5 Watts/ch Multimedia Speaker (2 pcs)	$[illegible]
YST-MS[illegible] Multimedia Speaker & Subwoofer (3 pcs)	$[illegible]
YST-M[illegible] 2-Way Multimedia Speaker	$[illegible]
[illegible] Multi-Channel Surround Sound System	$279.00

PC Works Desktop Speaker	$[illegible]
PC Works Four Point Surround Speaker FPS1000	$143.00
SoundWorks SW100 Amplified Speaker & Subwoofer	$[illegible]
SoundWorks Four Point Surround Speaker FPS2000	$113.00
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SyncMaster 955DF $485
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- 0.20mm (H) Pitch
- 1600x1200 @68Hz

SyncMaster 900NF $555
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128MB Memory
20GB Hard Drive
14.1" TFT Display
56KBps V.90 Fax Modem
DVD-ROM Drive
Built-in Sound System

Model	CPU	RAM	HDD	CD	Display	Price
2800C202	Cel700	64MB	10GB	DVD	13.3 TFT	$2,035
2800C302	P3-700	128MB	20GB	DVD	14.1 TFT	$2,725
7220CTE	P3-650	64MB	12GB		13.3 TFT	$3,200
3480CT	P3-600	64MB	12GB		11.3 TFT	$2,900
3480(win)	P3-600	64MB	12GB		11.3 TFT	$3,050
4330	Cel650	64MB	10GB	DVD	14.1 TFT	$2,085
4600	Cel650	128MB	10GB	DVD	14.1 TFT	$2,380
4600	P3-700	128MB	20GB	DVD	14.1 TFT	$3,025
4600	P3-750	128MB	20GB	DVD	15 TFT	$3,300
4600	P3-800	128MB	20GB	DVD	14.1 TFT	$3,345
8100	P3-700	128MB	12GB	DVD	14.1 TFT	$4,035
8100	P3-750	128MB	20GB	DVD	14.1 TFT	$4,295
8100(win)	P3-750	128MB	30GB	DVD	14.1 TFT	$4,435
8200	P3-850	256MB	30GB	DVD	14.1 TFT	$5,580
8200(win)	P3-850	256MB	20GB	DVD	14.1 TFT	$5,700
8200	P3-850	256MB	20GB	DVD	14.1 TFT	$5,880
8200(win)	P3-800	256MB	20GB	DVD	14.1 TFT	$6,080
8200	P3-1G	256MB	30GB	CDR	14.1 TFT	$7,200
8200(win)	P3-1G	256MB	30GB	CDR	14.1 TFT	$7,380

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$2390

Presario 12XL423

Intel Pentium III 700MHz
128MB 100MHz SDRAM
15GB Hard Drive
13.3" TFT Display
56KBps ITU V.90 Modem
8X DVD ROM Drive
Trident CyberBlade 3D Graphics

Model	CPU	RAM	HDD	CD	Display	Price
12XL404	Cel700	64MB	10GB	24X	12.1 TFT	$1,780
12XL504	Cel750	64MB	10GB	24X	13.3 TFT	$1,865
17XL402	P3-700	128MB	20GB	DVD	14.1 TFT	$3,158
18XL580	P3-1G	128MB	20GB	DVD	15 TFT	$3,510
1100	Cel700	64MB	10GB	24X	14.1 TFT	$2,355
110S	P3-600	64MB	10GB	24X	14.1 TFT	$2,645
E500	Cel650	64MB	6GB	24X	12.1 TFT	$2,130
E500	Cel650	64MB	5GB	24X	13.3 TFT	$2,870
E500	P3-600	64MB	12GB	DVD	14.1 TFT	$3,415
E500	P3-700	64MB	12GB	DVD	15 TFT	$3,615
E500	P3-800	64MB	10GB	24X	14.1 TFT	$3,615
E500	P3-850	128MB	20GB	DVD	15 TFT	$4,950
E500	P3-800	128MB	20GB	24X	14.1 TFT	$4,080
E500	P3-1G	128MB	30GB	CDR	15 TFT	$5,450
M300	P3-600	64MB	6GB		11.3 TFT	$2,970
M300	P3-600	64MB	12GB		12.1 TFT	$3,270
M700	P3-700	64MB	12GB	DVD	14.1 TFT	$3,900
M700	P3-750	64MB	12GB	DVD	14.1 TFT	$4,260
M700	P3-800	128MB	20GB	DVD	14.1 TFT	$5,000
M700	P3-1G	128MB	20GB	DVD	14.1 TFT	$5,300

TravelMate 350TE-N

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Intel Pentium III 650MHz
128MB PC100 Memory
10GB Hard Drive
13.3" TFT XGA Display
56K Modem/Wireless LAN
FDD/CD-ROM Combo
IEEE-1394 Port

$3125

Model	CPU	RAM	HDD	CD	Display	Price
202T	Cel650	64MB	5GB	24X	12.1 TFT	$1,715
350TE	P3-650	64MB	10GB	24X	13.3 TFT	$2,780
351TEV	P3-700	128MB	10GB	DVD	13.3 TFT	$2,945
525TXV	P3-700	128MB	10GB	DVD	14.1 TFT	$2,790
527TXV	P3-800	128MB	10GB	DVD	14.1 TFT	$3,270
603TER	P3-700	128MB	12GB	CDR	13.3 TFT	$2,960
738TLV	P3-750	128MB	18GB	DVD	15 TFT	$3,750
739TLV	P3-850	128MB	20GB	DVD	15 TFT	$4,220
739GTLV	P3-1G	128MB	30GB	DVD	15 TFT	$4,555

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Maxtor 80GB Hard Drive
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PCMCIA / PC Cards

Adaptec: APA-1360 MiniSCSI Parallel Port Kit .... $[illegible]
Adaptec: APA-1460D SlimSCSI Kit .... $[illegible]
Adaptec: APA-1480B SlimSCSI Kit (CardBus) .... $[illegible]
Modem 2000 Firewire HD w/Retrospect Backup .... $[illegible]
Archos 24X Mini USB CD-ROM Drive .... $[illegible]
[illegible] .... $[illegible]
ATI TV-Wonder USB .... $[illegible]
AverMedia AverTV USB External USB TV Tuner .... $[illegible]
Intel Pro/100 Mobile LAN CardBus II RealPort .... $[illegible]
Intel Pro/100 LAN+56K Modem CardBus II RP .... $[illegible]
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Linksys PCM100 10/100 Ethernet Card .... $[illegible]
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Margi Display-To-Go 4MB CardBus/VGA Connect .... $[illegible]
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Megahertz 3CXFE575CT 10/100 LAN X-Jack .... $[illegible]
Megahertz 3CCFE575CT 10/100 LAN CardBus .... $[illegible]
Megahertz 3CXFEM656C 10/100 LAN+56K Modem .... $[illegible]
Megahertz 3CXE589ECT 10BaseT .... $[illegible]
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Megahertz 3CXM756-CA 56K Global GSM Modem .... $[illegible]
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Micro Innovations 17-Keys Numeric Keypad .... $[illegible]
Micro Solutions 24X Modem Ultra Light CD-ROM .... $[illegible]
Micro Solutions 32X Modem CD w/Sound .... $[illegible]
Micro Solutions 32X Backpack CD-ROM .... $[illegible]
Micro Solutions 32X Backpack 32X CD w/Sound .... $[illegible]
Micro Solutions Backpack Ext. 1.44MB Floppy .... $[illegible]
Mobility EasyDock Universal Docking Station .... $[illegible]
Netgear FA410 10/100BaseT Ethernet PCMCIA .... $[illegible]
[illegible] Media Station Cover .... $[illegible]
PCMCIA 20x CD-ROM Drive (A/C not required) .... $[illegible]

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IBM

Model	CPU	RAM	HDD	CD	Display	Internet	Price
i1361u	Cel600	64MB	10GB	24X	12.1 TFT	Combo	$1,980
i1301u	P3-550	64MB	20GB	24X	13.3 TFT	Combo	$2,270
A21e	Cel600	64MB	13GB	24X	12.1 TFT	Combo	$2,060
A21m	P3-700	64MB	10GB	DVD	14.1 TFT	56K	$3,150
A21m	P3-750	64MB	20GB	24X	15 TFT	56K	$3,380
A21m	P3-800	64MB	20GB	DVD	14.1 TFT	56K	$3,870
A22m	P3-800	64MB	20GB	DVD	14.1 TFT	Combo	$3,650
A22m	P3-1G	128MB	30GB	DVD	14.1 TFT	56K	$4,225
A21p	P3-850	128MB	32GB	DVD	15 TFT	56K	$4,865
A22p	P3-1G	128MB	32GB	CDR	15 TFT	56K	$5,460
T21	P3-750	128MB	10GB	24X	13.3 TFT	56K	$3,190
T21	P3-800	128MB	20GB	DVD	14.1 TFT	56K	$4,035
T21	P3-850	128MB	32GB	DVD	14.1 TFT	56K	$4,595
T22	P3-900	128MB	20GB	DVD	14.1 TFT	56K	$4,790
T22	P3-1G	128MB	32GB	DVD	14.1 TFT	Combo	$5,725
X20	P3-600	128MB	20GB		12.1 TFT	56K	$3,475
X21	P3-700	128MB	20GB		12.1 TFT	56K	$3,755
TransNote	P3-600	64MB	10GB		10.4 TFT	Combo	$4,289

SONY

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FX-120

Intel Pentium III 700MHz
64MB Memory
10GB Hard Drive
13.3" TFT Display
56KBps V.90 Fax Modem
DVD-ROM Drive
iLink S400 Interface

$2599

Model	CPU	RAM	HDD	CD	Display	Price
FX120	P3-700	64MB	10GB	DVD	13.3 TFT	$2,599
FX140	P3-700	128MB	10GB	DVD	14.1 TFT	$3,199
FX160	P3-750	128MB	20GB	DVD	15 TFT	$3,790
FX170	P3-800	128MB	20GB	DVD	15 TFT	$4,799
FX190	P3-850	128MB	30GB	DVD	15 TFT	$5,099
SR 17	P3-700	128MB	20GB		10.4 TFT	$3,299
XG-700	P3-750	128MB	20GB	CDR	14.1 TFT	$4,799
XG-38	P3-700	128MB	20GB	DVD	13.3 TFT	$3,999
XG-39	P3-850	128MB	30GB	DVD	14.1 TFT	$5,499
Z505LE	P3-650	64MB	12GB		12.1 TFT	$3,299
C1VN	TM600	128MB	12GB		8.9 TFT	$3,199

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- ATX Mid-Tower Case w/Power Supply
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- 52x Speed UDMA CD-ROM
- Samsung 900NF 19" SVGA Monitor
- ATX Mid-Tower Case w/Power Supply
- Fujitsu 107-keys Keyboard/w MS Mouse

PIII-866MHz...$2,370
PIII-933MHz...$2,430
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Oxygen VX1	GLINT R3 processor with 32MB SDRAM AGP	$285.00
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Oxygen GVX1 Pro	GLINT R4 & GLINT Gamma G2 processor 64MB AGP	$1280.00
Oxygen GVX210	2x GLINT R3 + Gamma G2 processor 64MB AGP	$2135.00
Oxygen GVX420	2x GLINT R4 + Gamma G2 processor 128MB AGP	$2850.00
ELSA Gloria II	nVidia Quadro Processor 64MB AGP	$1100.00
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FP1350X	22"/20"V 0.25mmDP 1920x1440@85Hz	$1480.00
FP1355	22"/20"V 0.24mmDP 2048x1536@80Hz	$1410.00
FP1370	22"/20"V 0.24mmDP 2048x1536@80Hz	$1890.00
CPD-G400	19"/18"V 0.24mmDP 1800x1440@70Hz	$825.00
[illegible]	21"/20"V 0.24mmDP 2048x1536@75Hz	$1810.00
GDM-F520	21"/19.8"V 0.22mmDP 2048x1536@75Hz	$2575.00
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	ViewSonic	E55	0.28mm	1280x1024	13.8"	30-70KHz	$ 240
	ViewSonic	E651	0.28mm	1024x768	13.8"	30-54KHz	$ 248
17"	Optiquest	Q71	0.27mm	1280x1024	16.0"	30-70KHz	$ 298
	Optiquest	Q75	0.23mm	1600x1200	16.0"	30-85KHz	$ 388
	ViewSonic	E70	0.27mm	1280x1024	16.0"	30-70KHz	$ 305
	ViewSonic	E70F	0.2?mm	1280x1024	16.0"	30-70KHz	$ 308
	ViewSonic	E75	0.25mm	1280x1024	16.0"	30-70KHz	$ 358
	ViewSonic	G70M	0.27mm	1280x1024	16.0"	30-70KHz	$ 380
	ViewSonic	G75F	0.25mm	1280x1024	16.0"	30-86KHz	$ 490
	ViewSonic	GS773	0.26mm	1280x1024	16.0"	30-70KHz	$ 410
	ViewSonic	PF775	0.25mm	1600x1200	16.0"	30-97KHz	$ 520
	ViewSonic	PF77	0.25mm	1600x1200	16.0"	30-97KHz	$ 520
19"	Optiquest	Q95	0.26mm	1600x1200	18.0"	30-86KHz	$ 470
	ViewSonic	E90	0.23mm	1600x1200	18.0"	30-96KHz	$ 480
	ViewSonic	E95	0.22mm	1600x1200	18.0"	30-95KHz	$ 488
	ViewSonic	G90M	0.26mm	1600x1200	18.0"	30-97KHz	$ 550
	ViewSonic	G90F	0.25mm	1600x1200	18.0"	30-97KHz	$ 545
	ViewSonic	GS790	0.26mm	1600x1280	18.0"	30-95KHz	$ 555
	ViewSonic	P95F	0.25mm	1920x1440	18.0"	30-117KHz	$ 810
	ViewSonic	PF790	0.25mm	1600x1200	18.0"	30-97KHz	$ 665
21"	Optiquest	Q110	0.26mm	1600x1280	20.0"	30-97KHz	$ 900
	Optiquest	G810	0.25mm	1600x1200	20.0"	30-96KHz	$1,025
	ViewSonic	GS815	0.25mm	1920x1440	20.0"	30-121KHz	$1,280
	ViewSonic	P810	0.25mm	1600x1200	20.0"	30-95KHz	$1,236
	ViewSonic	P220F	0.26mm	1600x1200	20.0"	30-97KHz	$1,235
	ViewSonic	P225F	0.24mm	2048x1536	20.0"	30-127KHz	$1,445
LCD Panel	ViewSonic	VE150	0.30mm	1024x768	15.0"	30-62KHz	$ 990
	ViewSonic	VG150	0.30mm	1024x768	15.0"	30-62KHz	$1,035
	ViewSonic	VG151	0.30mm	1024x768	15.0"	30-65KHz	$1,090
	ViewSonic	VE170	0.30mm	1280x1024	17.0"	30-80KHz	$1,740
	ViewSonic	VG175	0.30mm	1280x1024	17.4"	30-82KHz	$2,045
	ViewSonic	VG181	0.30mm	1280x1024	18.1"	30-82KHz	$2,780
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- 52x Speed UDMA CD-ROM
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What's New

Continued from page 12

addresses displayed in Korean, Japanese, and Chinese. By late February, the system had grown to support more than 65 languages and VeriSign said the testbed has handled some 850,000 registrations.

Full support for Unicode (officially known as the Unicode Worldwide Character Standard) would encompass more than 34,000 characters and allow most of the world's written languages to be used for Internet addresses.

VeriSign's test bed for other-language Internet domains was created to test a scheme by the Internet Engineering Task Force (IETF) that would permit multilingual domains without completely overhauling the Net's domain name system (DNS).

Verisign is testing the system using the .com, .net and .org top-level domains for which it is the official registry. However, the multilingual domains can also be registered at third-party registrars that have been certified to submit new addresses to the test bed.

More information is available at the VeriSign Global Registry Services Web site (http://www.verisign-grs.com/).

—Newsbytes

Rio delivers Net radio to any room

S3 Inc. has announced its latest digital audio creation, the Rio Digital Audio Receiver, a device that allows consumers to stream CD-quality music from a PC to any room in the house using existing phone lines.

With multiple receivers, various digital music selections can be sent to different locations simultaneously. Individuals can choose music they want streamed to each Rio Receiver by scrolling and searching their stored collection via controls on the unit, or by using the receiver's remote control.

Out of the box, the Rio Receiver works with RealJukebox software. It supports various digital music formats, such as MP3 and Microsoft's Windows Media, and can be upgraded to support formats developed in the future. The unit also works with other jukebox software, such as Rio Audio Manager, and comes with a built-in amplifier to ensure high-quality digital audio sound.

The Rio Receiver connects to existing home speakers and phone lines and plugs into any electrical outlet, according to S3. No extra wiring is required, and the system's networking card simply snaps into place.

Information about the song, album, artist and total playing time is all displayed on a large back-lit screen whenever the receiver is on. The Rio Receiver utilizes a 10 Mbps connection to the PC for fast download of files to the receiver.

The Rio Digital Audio Receiver is expected to start shipping later this summer for an estimated retail price of US$299.95. That price includes the receiver, an audio connector for the PC (internal PCI card), two phone cords, and an RCA cable. Consumers can also purchase a Rio Receiver without the Rio Audio Connector for an estimated retail price of US$249.95.

—TCP Staff

Adobe intros interactive Atmosphere

SAN JOSE, Calif.—Adobe Systems Inc. (http://www.adobe.com) has unveiled Adobe Atmosphere software for creating interactive 3D Web pages. The Atmosphere browser is powered by the Viewpoint Media Player, and is the first project to come out of Adobe's investment in Viewpoint last year. A test version of the software can be downloaded from the Adobe Web site. The finished product is expected to be available in late summer, and the price will be set at that time.

—Newsbytes

First HDTV images Webcast

MANHASSET, N.Y.—In late March, a high-definition television (HDTV) broadcast was sent over the Internet from Hawaii to California—an event organizers say was the first time HDTV images were sent over an Internet protocol network to a location thousands of miles away.

Wayne Rash, editor of events at CMP Media's *InternetWeek*, coordinated the effort. Rash said video images of underwater scenery were sent from the advanced network computing lab at the University of Hawaii's Manoa Campus to the NASA Ames Research Center in Moffet Field, Calif. The HDTV broadcast was part of an *InternetWeek* test of enterprise infrastructure, he said.

"Until now, HDTV broadcasts like these have been done only on internal enterprise networks," the CMP editor asserted. The software, hardware and the video content were supplied by 2NetFX, a multimedia compression company, Rash said.

The broadcast used multicasting, which saves bandwidth by sending a signal that can be received by many people simultaneously without overtaxing servers.

"We sent out the video on a 22-megabit stream, and it did not matter how many people tapped in to watch," he said. "You also need an MPEG [video] decoder to watch an HDTV broadcast that comes over the air from a local broadcasting station."

The NASA Ames Research Center was selected because the broadcast needed a facility with the capability of receiving the HDTV images, Rash added. He enthusiastically declared that HDTV broadcasting over the Internet has important

Continued on page 20

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As companies continue to web-enable their business systems, the demand for Internet specialists will remain strong, especially for web developers and e-commerce strategists. Source: RHI Consulting 2001 Salary Guide

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What's New

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ramifications for the future of content delivery. He said colleges and universities could use it for distance learning, and said the fields of medicine and architecture would particularly benefit.

"Anything that can use the higher resolution of high definition video," he said. "A biology class can be taught in one location, and with the higher quality video there are more things the students can see in the structure of the plant or animal being studied. This also applies to art and physical sciences. In architecture, a model can be shown from all angles. In engineering HDTV can be used to manipulate scanned images."

An introduction to HDTV is available online (http://www.ee.washington.edu/conselec/CE/kuhn/hdtv/95x5.htm).

—Newsbytes

Baby mobile wins 3D design contest

A design for an interactive mobile with embedded intelligence that adapts its appearance, sound, and motion to the behaviour of a baby has been named the winner of the Create-What's-Next Design Competition sponsored by Alias|Wavefront (http://www.aliaswavefront.com) and IBM (http://www.ibm.ca).

The winner of the international competition to "create a vision of a product enabled by technologies approximately five to 10 years in the future" is Chicago-based industrial designer Aaron DeJule.

DeJule's mobile uses organic electronic displays to monitor a child's movements and respond with corresponding mobile activity. The mobile would display images on screen-like wings, changing from black-and-white still images to full-motion colour video as the infant develops.

DeJule's winning entry earned him a prize worth US$20 000, including US$10 000 cash, an IBM IntelliStation professional workstation with Alias|Wavefront StudioTools for Microsoft Windows-based computers, and an expense-paid trip to Toronto to participate in the awards ceremony.

—TCP Staff

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MIT to post course materials online

CAMBRIDGE, Mass.—The Massachusetts Institute of Technology (MIT, online at http://web.mit.edu) has announced plans to make materials for nearly all its courses freely available on the Web over the next 10 years.

The institution said the Web site for the project, MIT OpenCourseWare, will include material such as lecture notes, course outlines, reading lists and assignments for each course.

Over the next decade, the project expects to provide materials for more than 2,000 courses across the school's entire curriculum, in architecture and planning, engineering, humanities, arts, social sciences, management and science, MIT said.

MIT president Charles M. Vest said: "MIT OpenCourseWare is a bold move that will change the way the Web is used in higher education. With the content posted for all to use, it will provide an extraordinary resource, free of charge, which others can adapt to their own needs. We see it as source material that will support education worldwide, including innovations in the process of teaching and learning itself."

Professor Steven Lerman, MIT faculty chair, noted that many universities, including MIT, see the Web as a means of delivering revenue-generating distance education. But, he said, "We also need to take advantage of the tremendous power of the Internet to build on the tradition at MIT and in American higher education of open dissemination of educational materials and innovations in teaching."

MIT said the project will begin as a large-scale pilot program over the next two years, starting with the design of the software and services needed to support the endeavor, as well as protocols to monitor and assess its use by faculty and students at MIT and elsewhere.

By late 2003, materials for more than 500 courses are expected to be available on the site.

Among the benefits MIT staffers see for the project are that institutions worldwide could make direct use of the MIT materials as reference and sources for curriculum development, of particular value to developing countries trying to expand higher education systems rapidly.

Over time, if other universities adopt the model, a vast collection of educational resources would develop and facilitate the widespread exchange of ideas on uses for the resources in teaching and learning.

MIT said the project will serve as a common repository of information and a channel of intellectual activity to stimulate educational innovation and cross-disciplinary educational ventures.

—Newsbytes

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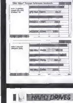

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Gone wireless: the telco connection

The current state of wireless access through your favourite cellular phone company

By Ross MacDonald

Over the last few years, we've witnessed the evolution of wireless data communications. The available services have gone from slow, expensive, and proprietary to slow, less expensive, and less proprietary. We will have to wait for the big pipes of 3G (the acronym for third generation cellular services) to arrive before big advances in wireless data will happen. However, as we wait for the better technologies to mature, there are a few ways to achieve efficient wireless connectivity through devices that are already available.

Here we're looking at what is probably the most portable means of staying connected: the wireless possibilities for portable computers (we'll use the term portable to refer to both notebooks and handhelds) where wireless means *full* access to the Internet and email as opposed to the more restrictive messaging and browsing technologies of the Blackberry and WAP (Wireless Access Protocol) devices or systems based on proprietary networks.

There are several possible combinations, although not all devices work with one another and not all signal carriers will support your particular favourite. So the overall trick to going wireless is to first find a wireless modem or access device that works with your computer, then find a service (read: telco) that works with your wireless modem.

Modem solutions

The most practical approach at the moment is to connect a suitably equipped cell phone to your portable computer using a special cable. This solution essentially converts your cellular phone into a wireless modem. Both Rogers AT&T Wireless and Bell Mobility offer kits that allow you to do this, although only certain PCS phones can be used.

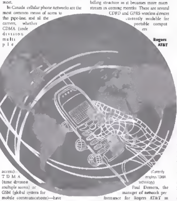
The alternative is to buy a wireless modem. Such devices are becoming more common in both PC Card and the smaller CompactFlash formats. This means they can be used in any portable with an appropriate expansion slot.

For handheld computer users, another alternative is an accessory "slipper" that the handheld slides into. Compaq's iPaq series exploits the slipper concept for a number expansion devices, and third party developers, like Novatel Wireless, make wireless slippers for the Palm devices and the Hewlett Packard Jornada 540 series under the Minstrel brand.

Matthew Hickus (pronounced Hickey) Palm Canada's director of partner and enterprise sales, explains that the networks are already in place to effectively offer us digital online access. "Wireless networks are the pipelines to move information back and forth. As long as there are interfaces between the different hardware devices, they can all talk through those same pipelines. The only question you have to answer is whether your PDA [personal digital assistant] has an interface to tap into the wireless channels that are already there."

Telco services

In short, hardware choices are increasing, but you still have to consider that your carrier may not support the product that best tickles your fancy. Or worse, that they might support the hardware but don't provide the geographic coverage needed when you require wireless most.



In Canada, cellular phone networks are the most common means of access to this pipe-line, and all the carriers, whether CDMA (code division multiple access) TDMA (time division multiple access) or GSM (global system for mobile communications)—have interfaces to allow connections between most portable computers and any suitably configured model of cell phone they support.

Michael Wright, technical specialist for Fido, notes that connecting to these circuit switched networks through the cell phone still requires a dial-up number to an ISP. It is important to understand that your cell phone carrier does not dictate your connection—your ISP does. Your cell phone must be within an area covered by your carrier, but your ISP's coverage will determine whether or not your cell phone carrier will be billing for a long-distance call.

"A lot of people who travel," says Wright, "are getting one of those 1-800 world connect numbers so that it wouldn't be a long-distance call. Then you'd pay only regular air time or the appropriate roaming rate for where you are."

Less well known, but becoming more established in Canada, are the CDPD (cellular digital packet data) and GPRS (general packet radio service) networks—wireless networks that are "always-on" in identical fashion to a cable connection at home. Some carriers already offer CDPD in specific areas but these are entirely separate from the regular cell phone networks and so are designed as well as billed for, differently (since you're always "on" you are generally charged a flat rate as opposed to paying per minute of air time).

Likewise, GPRS will require a different billing structure as it becomes more mainstream in coming months. There are several CDPD and GPRS wireless devices currently available for portable computers.

Rogers AT&T

(Currently employs TDMA technology)

Paul Demera, the manager of network performance for Rogers AT&T in Western Canada, describes the company's new wireless solution. "It's for circuit switched data and we call it our Portage Kit." The kit consists of a special cable to plug into the bottom of selected models of PCS cell phones on one side and a computer's serial port on the other. Also included is a serial port interconnecting device, or null modem adapter.

"If you're using a laptop, you just need the special cable which plugs directly from the phone into the serial port and the phone becomes the modem," explains Demera. "But if you're using a PDA, you need to use your synchronization cable to plug into the null modem adapter on one side while you have your special telephone cable plugged into the other. At that point, you just tell your PDA that there's a generic modem attached and dial in as usual."

Though its current wide-ranging network is circuit switched using TDMA technology, Rogers AT&T (jointly with AT&T Wireless in the U.S.) recently announced the development of a GSM/GPRS network that is expected to be up and running in 25 major cities in North America by July, with coverage expanding to just about everywhere by the end of the year. GPRS is a packet switched technology that is "always on."

Once that network is in place, there will be a much wider array of devices and wireless solutions that will operate on it. Depending on what hardware manufacturers elect to offer, GPRS may even allow you to use your cell phone as a phone and as a wireless modem simultaneously.

Fido

(Currently uses GSM technology)

Brian Roberts, director of business sales for Fido, explains that the company's best solution is an infrared equipped phone that communicates with any similarly equipped portable. But, since Fido uses GSM technology, you will have to be within a GSM coverage area at this time.

Alternatively, Fido customers could use a PC Card wireless modem instead of the infrared phone as long as it's GSM compatible. "If they already have an account with Fido," says Wright, "we can simply add the data service to the same smart card that works in their phone. They would then be able to exchange that chip between their phone and their PC Card." (Any GSM PC Card modem will have a smart card slot.)

However—and this is really important—Roberts states that, as things currently stand at Fido there are no third-party cards that are "supported" by its network. In other words, you may be able to find a GSM-compatible PC Card or CompactFlash modem that ought to work on the Fido network but the device may also not work on the network, and Fido will not be interested in helping you make it work on its network.

As it stands right now, Fido only supports a cable or infrared connection between phone and computer.

As we head toward packet switched data comm, however, Fido has a bit of a head start because GPRS is a GSM technology. As with Rogers AT&T, the number and variety of devices supported will grow as the GPRS network is adopted by more customers.

Bell Mobility

(Currently uses CDMA technology)

Tracy Kapteyn, wireless data manager for Bell Mobility in Alberta and B.C., begins with her company's wireless package, Digital Data To Go—a kit almost identical to Rogers AT&T's Portage, in that it contains a specialized digital data cable and null modem adapter but with the addition of Venturi Personal Client data compression software to speed things up. "When you buy one of our digital data capable phones," she explains, "all you have to do is select the Digital Data To Go kit that contains the right cable for the phone you've chosen."

Similarly, Bell Mobility also makes adapters available for a variety of handheld computers so that if you already use a Bell Mobility cell phone—or choose to sign up for one—you might be able to simply purchase the appropriate adapter without any further

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The telco connection

Continued from page 24

Similarly Bell Mobility also makes adapters available for a variety of handheld computers so that if you already use a Bell Mobility cell phone—or choose to sign up for one—you might be able to simply purchase the appropriate adapter without any further outlay. Alternatively, she cites the Sierra Wireless AirCard 510 as a PC Card modem that will be supported and sold by Bell Mobility by time of publication, and which will allow the user wireless access to the Web independent of the cell phone.

"The devices that I've mentioned are things that we support and distribute because they've been tested on our network," she says. "When you use the Digital Data To Go package, for example, it's not something that Bell Mobility produces but we support it because we know that it works as part of our wireless data configuration."

Kapteyn says Bell Mobility's packet switched network will be up and running by next year, which, just as with all the others, will open up the opportunity to select from more devices as well as billing schemes.

Telus Mobility and Clearnet

(Currently uses CDMA technology)

As Kapteyn outlined for Bell Mobility (above), Milo Decol explains that there's no problem using a CDMA digital phone that supports digital connectivity as the interface to your computer. However, unlike Fido, infrared is not available as an interface between devices, so all of Telus' phone-based solutions use cables and adapters to connect. He adds that Socket Communications produces CompactFlash and PC Card serial adapters that allow connecting directly between the phone and a PDA.

However, as a CDMA network, you can also use third party wireless modems, as long as there is a PC Card or Compact Flash slot available. Decol says "There are two types of modem cards: the packet data type—which would be separately set up on our iWeb Unlimited service to the CDPD network—and the circuit data type that people are more familiar with."

Telus currently supports one wireless PC Card modem, the CDMA-compatible Sierra Wireless AirCard 300.

Again, echoing Kapteyn, Decol explains that Telus will be supporting Sierra Wireless' AirCard 510 by time of publication. "That will allow you to assign a separate cellular number to that card. Insert it into your laptop or any PC Card-slotted PDA for wireless access completely independent of your phone."

Comparing technologies, Decol proudly says that, while Rogers and Fido both have data exchange speeds of 9.6 Kbps, CDMA networks can tout speeds of 14.4 Kbps. He adds that a new high-speed packet platform will be introduced by Telus at the end of this year that will support "144 thousand bits per second packet."

"Today both on the packet and the circuit platforms, you're going to see base speeds around 19.2 [Kbps]," says Decol. "But, shortly, in the PDA environment, you're going to see compression technologies that will yield speeds of around 28.8 [Kbps] for the Web but up to 56.6 [Kbps] for POP mail."

While this compression software has long been available for full laptop computers, Decol is referring to a new incarnation for Palm and Pocket PC that routes through the Telus compression server and matches up in proprietary fashion. You will, of course, have to buy it from them (around $50).

Speed bump

Regardless of which hardware combination or which carrier you end up with, creating a connection will be as straightforward as with a regular dial up connection under your OS. "The only difference is in the software and how it works," says Fido's Wright. "If you use a Palm or Handspring [Visor, a Palm OS based device], for example, you generally have to download an Internet browser because they don't come with one and you need a browser specifically made for their operating system." The two most widely available browsers for the Palm OS are AvantGo and Proxiweb.

But speeds of 9.6 Kbps and even 14.4 Kbps are frustratingly slow, even though digital connections mean that error correction is streamed. Fortunately, as Decol alluded to, you can add compression software to accelerate this less than impressive performance. Venturi, for example, sells a package that compresses POP3 and IMAP mail functions to yield speeds about equivalent to a 56.6Kbps modem. When Web surfing, however, the same technology—by reducing the colour range and compressing the text—can at least approximate a 28.8Kbps or a 33.6Kbps modem connection. Though only available for laptops at the moment, Venturi anticipates versions will be available for the Pocket PC and Palm platforms by the summer.

For speeding up LAN and WAN access, Infowave Wireless produces a secure corporate compression client for Microsoft Exchange that, like the Venturi application, will soon be available for the Pocket PC/Windows CE OS.

Canadian coverage

Users in the U.S. have been enjoying full, simple, wireless connectivity for quite some time through such devices as the Palm VII (a fully

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3Com PalmPilot

CDPD-equipped handheld not available in Canada) and Compaq's iPaquet.com bundle (combining an iPaq, a Sierra Wireless CDPD card, InfoWave compression software and a portal—a combo that is also not available in Canada).

But Pam Norton, product manager for Internet products and services for Compaq Canada, assures us that: "Going wireless in Canada is certainly possible right now, but most of the promise, in terms of being accessible to the average user is still to come. Part of the problem has to do with the limited network coverage in this country."

Fido's Wright agrees, adding that, due to the costs, coverage, and complexities involved right now, wireless connectivity still has a way to go in Canada before it becomes practical at the user level. "I wouldn't want to casually surf the Net using the current technology" he says. "But, for someone who travels a lot and really needs access no matter where they are, the current technology is certainly workable enough."

Telus spokesman Decol adds: "I can define the alternatives. For light users—who only go into their email for five or 10 minutes a day and access the Internet wirelessly on occasion—using the phone as their modem on our circuit-switched network is probably the best solution. But a heavy user would be better served by our flat-rate packet services."

So there you have it. Essentially, if you're willing to put in the leg work and put up with logistics, there's a wireless solution out there for you right now. However, with a little patience directed toward the end of this year, we are assured of an eventual wireless solution that will be more practical, more economical and maybe even more appealing.

Pundits generally agree that the migration pattern of wireless technology is leading all carriers toward a higher state of CDMA technology called UMPS (universal mobile phone system). This will be wideband technology with faster speeds, simpler setup, and more flexibility. But is not, alas, likely to show up until three or four years hence.

Also, many in the wireless industry are again invoking the tempting spectre of Bluetooth. If they're right this time—and they're going to have to be sooner or later—we will be seeing Bluetooth-equipped cell phones and computers by Christmas as well as adapters to add the feature to current devices.

If it ever actually comes to pass, Bluetooth will make secure, short range connections possible between all kinds of devices without the use of cables. ❑

Surfing by satellite

If you are so far into the sticks that the nearest source of telephony, either wired or cellular, is hours away, there is still a way to log on. Look up, waaay up and you'll see a global necklace of 48 low Earth orbit (LEO) satellites known as Globalstar (http://www.globalstar.ca).

Late last year Globalstar Canada launched a service that allows its customers to access the Internet over the Globalstar satellite network.

Globalstar Canada is offering a CDMA (code division multiple access) data service, which allows the Globalstar satellite phone to act as a wireless modem.

Speed tops out at 9.6Kbps, but when any data communication is better than none, this may be a viable solution.

The company says primary industries in particular are potential clients for this service.

"Canadian customers in the oil and gas, fishing, mining, and forestry industries have been eagerly awaiting the introduction of this service," said Peter White, general manager of Globalstar Canada when the service was announced in December.

"We expect this new capability will have tremendous appeal for existing customers and will attract new customers to the service, who have been waiting for the ability to transmit data," White added.

Globalstar operates 24 gateways around the world including two in Canada—in Smith Falls, Ont. and High River, Alta.

It is a partnership of telecom service providers Loral Space & Communications, Qualcomm, Alenia Aerospazio, DaimlerChrysler Aerospace, and Hyundai.

—*TCP Staff*

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Gone wireless: the LAN connection

TCP Test Lab looks at more solutions for sharing your Internet connection

By Sean Carruthers

In our February and April issues, we looked at broadband sharing devices, which allow you to split one incoming high-speed Internet connection among multiple connected machines in your home or small office We also had a brief look at wireless network systems, made up of an access point that communicates wirelessly to network cards. This type of wireless bridge is very handy for home or small office use under a couple of circumstances:

- Your PCs are located in separate rooms or on different floors of your building, and running cables is either exceptionally difficult or out of the question.
- You have one or more notebook PCs you'd like to use in a variety of locations—the den, the kitchen, or the backyard, for example.

Provided the distance between devices isn't too great, 802 11b wireless technology is a fairly clean solution for connecting all of the elements of your small network.

It's convergence, all over again

This month, we had the chance to look at a new product category in the networking world that combines these two functions. the wireless broadband-sharing device It's pretty much what you'd think, taking the standard broadband sharing box and adding wireless capability By combining the two, you may have to sacrifice a tiny bit of the functionality of the wired-only version of the device, but that typically would be one of the LAN ports or a parallel port for connecting a printer

The wireless devices, of necessity, are also more expensive than a straight broadband-sharing hub. The good news is that they're typically cheaper than buying a broadband-sharing device and a wireless access point separately

One cautionary note

When you're setting up a wireless network, it's always a good idea to have at least one hardwired device handy

Sometimes setting up the wireless devices can be a pain when you don't know all the settings you'll need to get straight. your wireless network will need an ID name and you'll probably need to set a channel, which is something you can't always do from the wireless card on your PC

When you have a hardwired device, you can surf the box over your Ethernet cable, which should be a guaranteed connection. From there, you can set your wireless broadband hub to the settings you know your wireless cards can handle

At the very least, you can see what the defaults are on the box and adjust your wireless cards from there in cases where the manuals are unclear about what the defaults are.

3Com Home Wireless Gateway

From. 3Com Corp.
http://www.3com.com
Suggested retail price. $599

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- Firewall capability
- Cable, DSL, and LAN compatible.
- Supports PPPoE protocol and passwording.
- Built-in antennae are non-adjustable
- VPN (virtual private network) support.
- Five-year warranty

3Com previously had a wireless access point for networking, but it was for larger businesses, and carried a big price tag ($2,600 for a kit containing three wireless PC Cards) As well, it didn't have built in LAN ports or built in cable/DSL functionality.

The Home Wireless Gateway addresses all of the issues simultaneously by adding broadband configuration into the firmware (including PPPoE), adding four LAN ports for PCs that still require the wires, and by dropping the price substantially You don't get any wireless cards in this package, but you can pick up individual cards as needed (3Com's PC Card is $300 and the PC Card/PCI adapter combination is $420)

Setup was fairly easy using the enclosed instructions. After installing the wireless card on the PC, a wireless client application is installed at which point your PC should see the gateway if it's in range. Within minutes, we had three PCs hooked up to our dedicated DSL connection—two wireless and one wired. Setting up the gateway for use with DSL was also easy, with setup screens stepping you through the process.

The data stream is rated at up to 11 Mbps and can maintain a connection at up to 90 m (300 ft.) but those are under ideal conditions. As you get further from the wireless gateway, your actual transmission speed will be lower, and if there are walls or other objects in between, your distance will be shorter We were able to achieve about 30 m (100 ft.) inside our office, which is packed with glass, metal, and concrete

Design wise the device is quite nice the antenna is built into the casing, and all of the plugs and wires attach to the rear of the

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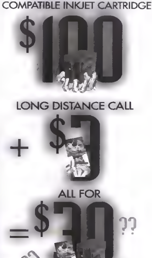

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The LAN connection

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device, keeping your desktop nice and tidy

Colubris CN100 Wireless LAN Router

From: Colubris Networks, Inc
http://www.colubris.com
Suggested retail price: $1,550 (converted from US$995)

- Device has one built-in 10/100 Mbps Ethernet port.
- 11 Mbps 802.11b PC Card fits into the top of the device, instead of built-in wireless.
- Wireless range at up to 100 m (300 ft.)
- 128-bit wireless encryption
- Antennae built into the PC Card inside the box.
- Built-in DHCP server auto-assigns IP addresses
- One crossover cable and one standard Ethernet cable included.
- Casing can be mounted on the wall with included attachments
- Compatible with cable, DSL and LAN connections.
- Supports PPPoE protocol and passwording.
- Client software allows up to four user profiles for use in different wireless LAN areas
- Firewall capability.
- VPN support
- One-year warranty

Canadian company Colubris offers a number of high-end networking solutions, but the CN100 is aimed at the home market. Relatively affordable compared to Colubris other products, the CN100 is nonetheless quite a bit more expensive than other products we're looking at this month, but it does come with at least one major advantage: the easy ability to upgrade the networking component of the router itself.

While all of the other products we looked at this month integrate the wireless component right inside the case, the CN100 does it differently, using an 802.11b wireless card in a user accessible slot. This setup allows the device to be upgraded relatively easily when new technology becomes available. The slot is also theoretically "neutral," which means it doesn't necessarily have to be 802.11b—it can be whatever new technology becomes available. (Note: This is theoretical at this point, but future technologies should be supportable due to this configuration.)

Another nice feature is the mounting kit. If you're not satisfied placing the CN100 on a desktop (or if you don't have the room), you can mount it on a wall.

The sticker price will probably frighten away casual users, but those more familiar with networking will appreciate the professional-level quality of the device and its potential to incorporate future technologies.

D-Link DI-713

From: D-Link systems
http://www.dlink.ca
Suggested retail price: $799

- Device has built-in three-port 10/100 Mbps switch.
- 11 Mbps 802.11b wireless built into the device with range of up to 100 m (328 ft.) indoors and 300 m (984 ft.) outdoors under ideal conditions.
- Antennae adjustable for best reception/transmission.
- 40-bit wireless encryption
- DHCP assigns up to 252 IP addresses for connected devices (either wireless or wired)
- Compatible with cable, DSL, and LAN, as well as dial-up or ISDN, via the included serial port.
- Supports PPPoE protocol and passwording.
- VPN support.
- Firewall capability.
- Two CAT5 Ethernet cables included.
- Lifetime warranty

The DI-713 looks pretty much like D-Link's other broadband sharing devices, except for the alien-like antennae sticking out of the back of the machine. It's slightly wider than the DI-704 (reviewed last month) and has one less Ethernet jack, but its wireless capability adds that lost connectivity back, plus some. If we have a major complaint about the machine, it's that the Ethernet jacks for WAN and LAN connectivity all stick out of the front of the box, which isn't the most elegant solution. It's a functional and powerful device, however, so this is mostly a minor issue in the grand scheme.

As with the DI-704, the DI-713 comes with a lot of powerful features, including full control over access to and from the device, including firewall capabilities, and tunneling for virtual private networking. The firmware on the box is very easy to use, making it a snap to set up your connection to the outside world. When we powered up the box in our lab, all our wireless equipment found it with a simple reboot (or by releasing and renewing the DHCP lease using the winipcfg.exe utility, if you prefer).

The DI-713 is designed to work with any

Continued on page 34

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The LAN connection

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compatible 802.11b equipment, but if you want to keep it in the family D-Link has several options for wireless connectivity, including the DWL-650 PC Card for $356, the DWL-500 PC Card and PCI adapter combo for $419, and the DWL-120 USB adapter for $419 (prices are suggested retail). We performed our tests using another manufacturer's card and didn't encounter any problems.

As with other D-Link products, the suggested retail price is a bit higher than that of some of similar products from the other manufacturers. What you get for that extra investment, however, is a professional-level product with maximum configurability. Even more important, if you do run into problems, the device comes with a lifetime warranty and free support.

Linksys Instant Broadband BEFW11S4

From: Linksys
http://www.linksys.com
Estimated street price: $475
(converted from US$299)

- Device has built-in four-port 10/100 Mbps Ethernet switch and uplink port
- 11 Mbps 802.11b wireless built in, with range of up to 91 m (about 300 ft.) indoors and 457 m (about 1500 ft.) outdoors.
- 128-bit wireless encryption
- Antennae adjustable for best reception/transmission
- Firewall capability
- Compatible with cable, DSL, as well as LAN.
- Supports PPPoE protocol and passwording.
- DHCP assigns IP addresses for up to 253 connected devices (either wireless or wired)
- VPN support.
- No Ethernet cables are included, so budget a few extra dollars for a set.
- One-year warranty

Those familiar with Linksys' hubs and broadband sharing devices will feel right at home with this device as it's similar in look, layout, and functionality to the company's other products. Again, a pair of adjustable antennae sticks out of the back.

As with the other products this month, the Linksys unit has all of the features you'd expect in a broadband sharing/wireless package, including firewall, VPN support, and 802.11b compatibility. This model goes a bit better than some other models by including four Ethernet jacks instead of three, as well as an uplink jack on top of that. Even better, it has one of the most attractive price points for this type of device.

Setup of the device was relatively easy. We had to do a bit of configuration of the router to make it work with the broadband connection, which is standard with all of these devices. Once up and running, the BEFW11S4 worked just the way it should. As with other devices of this type, you can configure static IPs, change your IP range, filter packets, and perform tunneling for virtual private networking.

As with other Linksys hub products, this device stands up on four legs. The disadvantage of this design is that it needs to rest on a flat surface to prevent it from wobbling, but the advantage is that it offers some ventilation space between the router and whatever is underneath it.

The device is compatible with all standard 802.11b devices, but if you want to stay within the same product line, Linksys' PC Cards have a street price of about $199, and the PCI adapters for your desktop are $60 (these require you to buy the PC Card separately).

SMC Barricade 4-Port Wireless Broadband Router

From: SMC Networks, Inc.
http://www.smc.com
Estimated street price: $499 to $549

- Device has built-in three-port 10/100 Mbps Ethernet.
- 11 Mbps 802.11b wireless networking, with a rated range of up to 1,500 ft. (450 m) outdoors under ideal conditions (you'll achieve substantially less indoors).
- 128-bit wireless encryption
- DHCP auto-assigns address for up to 252 connected devices—either connected or wireless.
- Compatible with cable, DSL, ISDN, modem, and LAN.
- Supports PPPoE protocol and passwording.
- Firewall capability.
- Built-in parallel and serial ports for sharing printers and modems over your network.
- Adjustable antennae.
- VPN support.
- One Ethernet cable.
- Lifetime warranty.

Though at a quick glance it looks similar to other such devices, the SMC wireless broadband-sharing unit has a few differences. First and most obvious, it comes with at least one

Continued on page 36

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VideoCam Logitec QuickCam Express/Pro	59/108
PCI SIS 8M/ATI 8M	49/79
AGP SIS 8M/8M TV	39/49
Asus V7100 32M/TV/Dual display	155/169/189
Asus V7700 Geforce II 32M/Deluxe	275/325
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ATI TV Wonder/ Wonder VE/USB edition	95/69/135
ATI Radeon All-in wonder 32M AGP	335
ATI Radeon LE32DDR/32SDR/TV/DDR	139/155/165/229
ATI Radeon 64MDDR/64MVIVO/VE32M	285/299/155
ATI AGP All in wonder 128Pro4X 16/32M	199/255
ATI AGP 2000/2000Pro/Fury Pro 32M	85/108/145
ATI Xpert 98 AGP 8M	52
GeForce2 MX32M AOpen/Elsa	133/115
GForce2 PowerGene MX TV 32M/Dual View	149/199
Nvidia TNT2 32M M64/Pro	69/85
Nvidia TNT2 PowerColor M64 32M/with TV	79/95
Voodoo 4500/4500TV/5500	159/189/229

CD-ROM

Aopen52x/50x/48x	*49/47/44*
Creative 52x/Sony 52x/LG 52x	53/55/45
SCSI Toshiba 40x	126
CDRW	
8x4x32 Panasonic/Acer/Goldstar/Sony	139/139/133/169
SCSI Yamaha 16x10x40	399
Software for above CDRW	12
Plextor /Teac 16x10x32	369/329
AOpen/Ricoh/Plextor 12x10x32	199/199/319
Yamaha 16x10x40 w/sw	309
HP 9150i/9350i/9510(retail)	219/259/279
DVD Panasonic 12x/Pioneer 16x	105/115
Decoding software for DVD movie	15
TecRam 995 SCSI Adaptor	54

Multimedia

Crystal 3D ASound 32bit sound card	15/16
Acer AW37/744L/744 Deluxe	18/29/35
Sound Blaster Ensoniq/PCI128/LiveValue	30/44/69
Sound Blaster MP3/XGamer/Platinum	135/135/185
Speakers 140w/260w/600w Subwoofer	9/14/33
Speakers Altec Lansing ACS45.2/ACS54	79/85
Speakers GNT 5000/Yamaha MS201	50/54
Microphone/Headphone with mic	8/14

FAX/MODEMS

Motorola/Rockwell 56K V.90 Data/Fax Voice	**22/22**
Acer 56K V90 Voice PCI SM/PM /ISA	27/42/65
Diamond Supra 56K V90 Voice	42
USR 56K V90 PCI voice/no Voice	48/43
USR56K Hardware modem voice/no voice	95/84
External FaxModem 56K DLink USB	115

Keyboard/Mouse

Win98 / Fujitsu/Multimedia	10/18/15
MS Natural/Internet (w/system)	33/26
2 button Mouse Serial/PS2/USB	5.5/5.5/9
Scroll Mouse PS2/Combo	9/12.8
Logitech 2 Button/scroll Mouse	9/14
Trackball/Finger/Wireless Mouse	26/23/38
MS Optical WheelMouse (w/system)	35
Logitech Cordless Freedom keyboard & Mouse	109

Misc.

Firewire Adaptor Acer 3 ports 1394 w/Editing SW	65/85
USB Adaptor/4Port Hub	28/28
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The LAN connection

Continued from page 34

extra port on the back. In addition to the serial port for sharing ISDN or dial-up connections, it also has a parallel port, so you can share a single printer among all of the devices on your network.

Setting up the Barricade was reasonably easy using a connected device though we had one problem when using another manufacturer's wireless card. the Barricade's default networking settings were slightly different from those of the cards used in our test. If your wireless cards don't support manual channel adjustment (the first one we tried didn't) you'll have to do initial router setup with a cable connected device, then adjust the settings on the hub instead.

Apart from this issue (and such things are inevitable when you're networking devices together), the SMC Barricade worked smoothly, delivering data to wireless devices without problems. The device is rated for transmission to equipment up to 450 m (1 500 ft.) from the router, but this would be under ideal conditions and outdoors. You can realistically expect a much shorter range, especially if you're in a building like ours, with lots of steel and concrete.

For those who want to go with SMC wireless cards for connecting everything up, PC Cards run about $250, and PCI adapter/card combinations are $325

Ugate-3300
From: MaxGate Inc.
http://www.maxgate.net
Suggested retail price: $550 (converted from US$330)

- Device has one built-in 10/100 Mbps Ethernet port and one uplink to a hub

- 11 Mbps 802.11b wireless component is not built into the device, but the Ugate features a PC Card slot and one 802.11b PC Card that sticks out the rear of the unit.
- 128-bit wireless encryption
- DHCP auto-assigns addresses for up to 253 devices, either wired or wireless.
- Parallel port for sharing printers on your network.
- Compatible with cable, DSL, and LAN.
- Supports PPPoE protocol and passwording
- Firewall capability
- VPN support.
- Antenna is built into the PC Card so can't be adjusted.
- No Ethernet cables included, so budget a bit extra for a set.
- One-year warranty

From the front, the Ugate-3300 is almost identical to the Ugate 3200—the company's seven-port broadband sharing router. From the rear, however, the differences are clear. The 3300 has a single Ethernet port, one jack for connection to a hub, and a parallel port (which the 3200 lacked).

More notably, however, there's a PC Card slot that is designed to hold the networking component. In this case, the Ugate 3300 shipped with a Ugate 802.11b wireless card.

Setup of the Ugate-3300 was pretty basic. While the Web interface for configuring the unit is a bit on the ugly side, it is certainly very straightforward and functional, and gives you a lot of power over your configuration. It's fairly easy to set up your device for use with your broadband connection. Setting up your wireless component is also a snap.

While the inclusion of a printer port on the Ugate 3300 is a nice bonus, the real feature is the ability to remove and update the networking component.

Because you have the ability to upgrade the hub's firmware, it's quite likely that you'll be able to flash upgrade the Ugate 3300 to accept newer wireless networking technologies as they become available.

The only thing you sacrifice is the ability to position an antenna for better reception and transmission, but that's probably a pretty minor issue for most users ❑

There's always Home RF

While the promise of widespread Bluetooth connectivity is still around the corner, we already have HomeRF, which has a shorter range than 802.11b, but is also generally cheaper. We received one HomeRF broadband-sharing setup this month.

Symphony HRF
From: Proxim Inc
http://www.proxim.com/symphony/
Symphony Cordless PC Card: US$120
Symphony Cordless Gateway: US$200
Symphony Cordless USB Adapter: US$95

Proxim's line of Symphony devices are designed to work in harmony with each other to network all of your devices using radio frequency (RF) technology.

When you have PC cards or USB adapters, you simply network your devices to each other and share files. If you add a Gateway to your setup, however you can easily split a broadband connection amongst all networked devices.

The Gateway is a very compact device, featuring only two Ethernet jacks, both for connection to the upstream network. This dedicated setup allows for the small size of the device, which can easily be tucked away, but it also means you can't use it for other PCs connected by Ethernet cable, like you can with the 802.11b devices reviewed above.

The price differential, on the other hand, allows you to purchase additional adapters for all the PCs you wish to place on the network.

The configuration software is very easily installed, and very straightforward: you don't have to understand much about networking to get your HomeRF network configured.

The Gateway supports static IP, DHCP, and PPPoE connections, which means it can be used on a standard LAN or with cable or DSL modems.

What you give up when you move to Home RF is network performance. Although it uses the same 2.4 GHz frequency range as 802.11b, HomeRF is limited to a speed of 1.6 Mbps at a maximum range of only 45 m (150 ft.). Furthermore, this setup can only connect up to 10 devices, which is only really suitable for small-scale operations.

The name is HomeRF after all, and as you'd expect, these limitations really only make it suitable for the home. Corporate networks should really look at 802.11b technology instead.

While the Gateway is platform agnostic, the adapters are only compatible with Windows 95 (OSR2) and/or Windows 98 (the USB adapter is Windows 98 only).

—Sean Carruthers

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Celeron 667/766——$575/625
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Eagle Touch Internet Keyboard
Dual Wheel 4D Optical Mouse
56K V.90 Voice Fax Modem
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Monitor
KDS VS-7i 17 / VS-190i 19......319 / 550
KDS AV777F .24mm Flat......[illegible]
KDS AV195TF .24mm 19......[illegible]
A.O.C 7Glr / 7Klr 17"......300 / [illegible]
A.O.C 9Glr......[illegible]
Samsung 753DF Flat 17......300
Samsung 900IFT Flat 19"......[illegible]
NEC FE700 / A875......310 / [illegible]
Viewsonic E70F 17......[illegible]
Aopen F56L 15 LCD......[illegible]
Samsung 570V 15 LCD......[illegible]
[illegible] 15 LCD......719

Motherboard
Asus CUV4X-C / CUV4X-E......149 / 170
Soyo CUSL2-C / CUSL3......186 / 200
Asus A7V133 / A7V133 W/Audio......218 / 188
Aopen AX34 8378 AGP4X......123
GA 7ZMM ATA100 w/DB PC133......164
GA 6VXC7-4X 8378 AGP-4X......[illegible]
MSI K7366 Pro DDR......[illegible]
MSI 6309 Socket 370 AGP4X......[illegible]
MSI K7T Pro2 Socket A AGP4X......[illegible]
Elite P6STP / P6BAP......110 / 119
Elite K7VZA Socket A AGP4X......120
[illegible] K7 AGP4X V/S/L On Board......118

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Conexant 56K V.90 Fax Modem......23
Aopen 56K v.90 PCI Fax Modem......26
Diamond Supra Max 56B Modem......48
USR 56K v.90 Win Modem......43
3COM PCMCIA Modem......77
Surecom Ethernet 10mbps......18
Surecom 10/100 Ethernet......20
Surecom 10mbps Hub 5port / 8 port......30/48
Surecom 10/100 mbps 5port Hub......77
Surecom PCMCIA 10 /100......45 /60
High P 10/100 Network Adapter......18
D-Link 10mbps combo Ethernet......18
D-Link 530TX 10/100 NIC......22
USB Hub 4 port......28
RJ45 Cable 10/15/25/50'......8 / 8 / 11 / 17
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Pioneer 16X DVD / Aopen 12X DVD......115 / 96
Plextor 12X10X32 / 16X10X32 CDRW......260 / 360
LG 8X4X32 CDRW With Software......188
LG 12X8X32 3M Buffer With software......300
Panasonic 8X4X32 CDRW......130
Panasonic 1.44M FDD / 100M ZIP......17 / 80
Blank CD-R 74M with Case / 25Pcs......1 / 22

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Creative SB 128 PCI Sound......40
Creative SB Live Value......60
Altec ACS 54W Speaker system......88
Dynamic 350W Speaker + Sub......38
Samsung [illegible]......40
4000W Speaker+Subwoofer......47
Zenon 5000 Speaker + Sub......57
Bicolor 3D Speakers 280W......19

Case / Power / Fan
15" ATX / 250W / 300W......35 / 47
17" ATX / 250W / 300W......42 / 55
18" ATX / 250W / 300W......47 / 58
18" Black Tower + KB+MS......145
20" Silver Tower no power......68
230w power AT / 250w ATX......22 / 27
300w power ATX / 330w......45 / 50
PIII Socket 370 Cooling Fan......8
Cooler Master Cooling Fan......10
Thermaltake Cooling Fan......18

Video
32M Nvidia TNT2 32M / GeForce 2 MX......[illegible]
Nvidia TNT2 32M / GeForce 256 32 M......[illegible]
Asus V7100 32M / Twin View......[illegible]
Asus V7700 64M Geforce GTS 32M DDR......[illegible]
Asus V7700 Dlx Geforce GTS 64M DDR......[illegible]
ATI Radeon 64M DDR Video-in & Out......[illegible]
ATI Radeon All-in-Wonder 32M AGP......[illegible]
Gigabyte TNT2 32M......79
Sniper2 AGP 4X 32M / PRO 128 32M......88 / 125
Sniper2 Geforce2 MX 32M TV-out......[illegible]

Keyboard & Mouse
Logitech Cordless Key + Mouse......60
Win98 Keyboard + 3B Mouse......10
Internet / Logitech Internet......14 / [illegible]
Chinese keyboard / Internet......18 / 28
MS Elite / Internet......35 / 33
Keyboard / Mouse Adapter......3
AP 3D Mouse / Wheel Mouse......8 / 10
Dual wheel Mouse / Optical......18 / 33
Designer wheel mouse......8

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3Com/USR 56k D/F int. PCI	$49
3Com/USR 56K D/F/V Int. Hardware PCI	$95

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ATI Xpert 2000 32MB AGP	$89
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ATI All-in-Wonder 128 Pro AGP 16MB/32MB	$199/$349
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Hands On

Lab Test • Hardware Evaluations • Software & CD-ROM Reviews

Minding the (data) store

TCP Lab looks at high-capacity storage solutions for that big appetite

By Sean Carruthers

It's inevitable, no matter how much storage you have right now, new programs and data will eat up all of your space. This is especially true if you use your computer in any of a number of data-intensive tasks—database work, multimedia production, audio file processing, or digital image manipulation.

This month *The Computer Paper* has chosen to look at higher-capacity storage solutions, both hard drive and rewriteable DVD drives.

Those who want to check out what's new in the world of CD-RW, fear not. we will be featuring CD-RW products in the May 2001 issue of our sister publication, *Computes!* (If you live in a region that doesn't receive the print edition of *Computes!*, you will be able find it online, at http://www.canadacomputes.com, in the first week of May)

Hard drives

You don't often think about your hard drive until you begin to run low on space, and if you use your computer regularly, one thing is certain. you're going to run out of space

Every time a new version of your favourite software is released you can bet it will eat up a good portion of your hard drive

If you play new video games, there's a good chance they'll also use a substantial portion of your remaining space—some recent games have required over 1 GB for a complete install!

If it's time to upgrade your hard drive, you have to consider a few things Many new motherboards feature IDE connections with a 66 MBps disk transfer rate (also known as ATA66) and even newer boards support ATA100 (also referred to in product literature as ATA III, ATA 5 and Ultra ATA/100, among other names)

The good news is that you can generally use ATA100 hard drives with older motherboards, and slower hard drives with ATA100-compatible motherboards.

For best performance, though you'll want to match your drive with the motherboard, or get an add-in controller A PCI Card ATA100 controller generally costs less than $100 and speeds up your hard drive performance substantially when teamed up with an ATA100 drive.

Another thing to consider is the spindle speed—the rate at which the platters inside your hard drive spin—of your new drive. When looking at new ATA drives, you generally only have two choices. 5,400 revolutions per minute (rpm), or 7,200 rpm.

If you want to get the best performance, 7,200 rpm drives will give you a definite speed advantage, but at the penalty of extra heat inside your computer.

The rapidly spinning 7,200 rpm drives generate so much heat that touching them is unwise Because of this, anyone considering the 7,200 rpm hard drives should also invest in extra cooling fans for the inside of the computer case

Extra cooling is always a good idea anyhow, because all components generate heat, and too much heat can shorten the life of all of the components inside the case.

This month, we've chosen to look at hard drives that use the new ATA100 interface We asked manufacturers to submit drives with capacities from 30 to 40 GB, and with the fastest spindle speed available

IBM was asked to submit a new drive from its Deskstar series, but models were not available to general Canadian retailers at the time of our testing You may be able to find bare drives for individual sale at some resellers, but probably not in retail boxes

Continued on page 42

A boy and his dog

Sony's new Aibo works hard at creating the illusion of life

By Emru Townsend

It was a snowy Montreal evening when I crossed Sherbrooke Street to info Computer & Electronic to see the second-generation Sony Aibo My wife Vicky wondered why I was making a trip to play with something I could pick up at a toy store (this was not, I explained, a PooChi), my parents expressed mild amusement at the notion of a robot pet, and my friends... well.

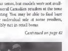
Sony ERS-210 Aibo
From Sony
http://www.aibo.com
Suggested retail price $2,250

In a broad sense, this is what's interesting about Aibo: almost everyone is familiar with the new wave of interactive pet "toys," but few know about their progenitor Aibo

When it was released in June 1999 the ERS-110 Aibo Entertainment Robot was the first robotic canine companion It frolicked, wagged its tail, and sat on command

A few months later, however, PooChi, Tekno the Robotic Puppy, I Mega Byte Cyber Dog, and their ilk began to flood toy stores and TV airwaves, battering the public with the concept of the robot dog as—apologies to Douglas Adams—your plastic pal that's fun to be with.

It's likely that Tiger Electronics—which gave the world the Furby, and now offers the PooChi, the Aibo-like i-Cybie, and the feline Meow Chi—and other toy manufacturers sat up and took notice when the 5 000 first generation Aibos were snapped up despite their $3 000 price tags (the 2 000 Aibos destined for the Japanese market via Sony's Web sold out in a mere 20 minutes)



And why wouldn't they be popular? It's an interesting concept. Not only did the Aibo play and bark, it could be taught to recognize its name, learn commands, and communicate with others of its kind.

Of course, with only 5,000 in existence, playing well with others was not a real selling feature—factor in the price tag and it's clear that if buying your own Aibo was hard, finding a friend for it would be harder.

Continued on page 49

Go flat without going broke

By James Careless

Flat panel monitors everybody wants one. Small wonder; regular CRT (cathode ray tube) monitors are desk-bending space hogs. In contrast, TFT (thin film transistor) flat panels have small footprints and don't weigh much Better yet, flat panels don't flicker, don't give off radiation, and use about two-thirds less power than CRTs.

SyncMaster 570
From Samsung
http://www.samsung.ca
Estimated street price: $999

There's been one major drawback to flat panels, and that's price Typically flat panels have cost in the thousands of dollars, while CRTs have only been a few hundred.

Given that CRTs also offer some other advantages—such as the ability to effectively handle multiple resolutions and longer lifespans—and one can see why many people have opted to stick with space hogs

Enter the Samsung SyncMaster 570s 15-inch TFT LCD flat panel monitor Originally priced at $1,799 it now has an official suggested retail price of $1,350 The good news, however, is that you can now find the 570s for $999 in Canada

In CRT terms, two reference comparisons to the 570s would be the Samsung 15 inch 550s CRT (about $200) or 700IFT (about $430)

We list two because 15-inch flat panel screens offer a true 15 inches (diagonal measurement) of viewing area, whereas a CRT will always be and inch or so less. So a 15 inch TFT has an effective viewing area larger than a 15-inch CRT, but not quite as big as a 17 incher

Still, in either case, there's a big price delta on the TFT So what do you get for the extra cash? Well, based on our experiences with the 570s—tested in our small office—quite a lot.

First, there's the image quality With a pixel

Continued on page 40

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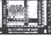

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Continued from page 38

pitch of 0.297 mm and a native resolution of 1024 x 768, the 570s' picture was extremely clear. Better yet, the colour was bright and vibrant: it was a pleasure to look at.

Second, there's ease of set up. We were able to connect the 570s into a Windows 98/Celeron 433 homebuilt clone with absolutely no problems. As well the cable ports on the back of the 570s were simple to access and use.

Third, the 570s can be turned into a portrait-style monitor simply by rotating the screen 90 degrees. Of course, you have to also install a special Samsung driver to flip the screen image as well, unless you enjoy working with your head lying on your desk. Still, the fact remains that the 570s offers tremendous flexibility with this feature.

Fourth, the 570s viewing angle is ±55 degrees horizontally and ±60 degrees vertically. Granted, this is not as good as the viewing angle offered by a CRT, but then this limitation is common to all flat panels, no matter who makes them.

Fifth, the 570s screen can be tilted up to 25 degrees (-5 degrees to +20 degrees off vertical), and the monitor itself can be raised or lowered up to two inches.

However, there remains the nagging question of reliability. Flat panels are known to be less durable than CRTs.

That's why it's reassuring to know that Samsung warranties the 570s for three years' parts and labour, including a 20,000 hour warranty on the screen's backlight.

Considering that three years seems to be a pretty typical lifespan for the average SOHO computer system, this seems about right.

The bottom line: our small office's assessment of the SyncMaster 570s was best described by our researcher.

After using the 570s for a few weeks, she said: "It's awesome. Can I keep it?" ❑

TCP Test Lab

Controlling extra hard drives

You may be entirely satisfied with everything else about the way your system is configured, but want to add a newer and faster hard drive.

Only one hitch: your motherboard may not support ATA100, and replacing the motherboard itself could introduce a whole host of other problems, such as compatibility issues or the loss of older legacy cards that may not be supported by new motherboards (ISA springs to mind).

The good news is you don't necessarily have to replace the motherboard to get a faster transfer speed to and from the drives if you drop in a PCI controller card.

There are a couple reasons you might want to do this right off the bat. First, you can quickly and easily add an ATA100 interface to your system without having to tear out the guts of the system—high speed with only minimal installation pain.

Second, it can increase the number of IDE devices you can use with your system. Typical PCs only feature support for up to four devices (one of which is your CD-ROM drive), and dropping in a card will add support for another two or four.

Many of these cards will also allow you to select the drive you want to boot from, so you can also run multiple operating systems with the addition of one of these cards.

There's another reason for adding a controller card, less obvious to the typical home user but more appealing to the power user: RAID. RAID stands for redundant array of independent disks (or redundant array of inexpensive disks), and is a technology designed for backup of data, disk sparing, and data reliability.

If you attach multiple drives to a RAID controller, your setup should be able to tolerate the failure of one of the connected drives without data loss.

Drives can be set up as mirrors of other drives, or you can set up your system to recognize more than one drive as a single contiguous volume.

We looked at the Hot Rod 100 Pro from Abit (http://www.abit-usa.com), which adds two ATA100 IDE channels to your system using a single PCI slot.

After installing the card, Windows recognizes the card upon next bootup, and after a driver install and reboot, any properly formatted drives attached to that chain will be immediately recognized and usable. We had no hitches installing the card under either Windows 98 or 2000.

There are some things you need to verify if you're planning to add one of these cards. You need to have a PCI slot free (and the associated IRQ), and your PC power supply must have enough power (both connectors and the juice coming from the power supply).

If you're planning to add three or four extra drives to your system, you should probably consider upgrading your power supply to at least 300 watts.

For more information on the Hot Rod series of ATA100 cards, check out Abit's Web site.

—*Sean Carruthers*

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Minding the (data) store

Continued from page 38

It's also worth noting that Samsung has 7,200 rpm drives on the market but none was available in time for our test. We opted to look at one of its 5 400 rpm drives in the interim

A note about the testing

Hard drive testing was done with two suites this month. Disk throughput tests were performed using ZiffDavis WinBench99 version 1.2 which is owned by eTesting Labs, Inc This testing was done without independent verification by eTesting Labs, Inc., which makes no representations or warranties as to the result of the tests

All testing was done using shipping versions of Windows 98 SE and of hardware currently available to the public A breakdown of our system specifications appears in the chart included with this review

General system performance testing was also conducted, using BAPCo SYSmark 2000 benchmarking software. Again, all testing was done with the same test bench using the exact same software setup and any variations in testing scores are the result of the hard drives alone

7,200 rpm drives

Fujitsu Picobird MPG3409AH-EF

From. Fujitsu Canada, Inc
http://www.fujitsu.ca
Suggested retail price: $290

- 40.93 GB formatted capacity
- ATA100 interface.
- 7,200 rpm spindle speed
- Three-year warranty

Fujitsu hard drives have long been valued by both system builders and end users for their reliability, and have been consistently adequate performers: not too slow but not at the top of the pack

With this model, that changes The MPG3409AH turned in benchmarking scores

that met or beat most of the other drives. Disk transfer rates started out reasonably high, and stayed higher than all but one of the other drives by the time it hit the 40 GB mark. If reliability stays as high with this model as it has been with other Fujitsu drives, you won t have to choose between performance and reliability This one takes our Editor s Choice award, this month.

Maxtor DiamondMax Plus 40 5T040H4

From Maxtor Corporation
http://www.maxtor.com
Estimated street price $260

- 40 GB formatted capacity
- ATA100 interface
- 7 200 rpm spindle speed
- Three-year warranty

Drives in Maxtor's DiamondMax Plus 60 series go up to 60 GB (the company has an 80 GB drive elsewhere in its product lineup) We looked at the 40 GB model This particular model has a reasonable price and provides fairly reasonable performance in both SYSmark 2000 and the disk transfer rate testing

The Disk WinMark scores were lower than

expected, this can only be an aberration, considering the results turned in by SYSmark and the other scores on components of the Ziff Davis test suite For the most part, the Maxtor drive certainly seems to perform well on most of the tests

Quantum Fireball Plus 40 AS

From Quantum Corporation
http://www.quantum.com
Estimated street price $249

- 40 GB formatted capacity
- ATA100 interface
- 7,200 rpm spindle speed.
- Three-year warranty

Quantum s Fireball line of drives has been quite popular offering a good combination of performance reliability, and price That

reputation fits the Fireball Plus 40 AS

It provides performance that s comparable to the other drives this month (though it tails off a little bit at the 40 GB mark in the disk transfer test but not by much) Essentially those who have been impressed by Quantum s drives in the past will not be disappointed by this new one.

Seagate Barracuda ST340824A

From Seagate Technology
http://www.seagate.com
Estimated street price: $275 (converted from US$175)

- 40 GB formatted capacity
- ATA100 interface
- 7,200 rpm spindle speed.
- Three-year warranty

Barracuda indicates performance in the Seagate line, and this model certainly performs well, holding its own against all of the other drives While it didn t have the best overall performance, it came very close in pretty much every category, notably its disk

Continued on page 44

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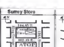

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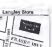

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Panasonic 1.44M Floppy Drive	Panasonic 1.44M Floppy Drive	Panasonic 1.44M Floppy Drive	Panasonic 1.44M Floppy Drive
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Lexmark Z42/Z52	$159/239
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Acer 4300U	$129
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HP3300/4300U	$135/209
HP5300/6300U	$295/549

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Minding the (data) store

Continued from page 42

transfer rate held up high at the end of the 40 GB test transfer.

You certainly shouldn't have many complaints with this drive, and whether you're partial to Seagate drives or not, it's bound to be a good choice.

Western Digital Caviar WD400BB

From: Western Digital Corporation
http://www.westerndigital.com
Estimated street price: $300

- 40.8 GB formatted capacity
- ATA100 interface
- 7,200 rpm spindle speed
- Three-year warranty
- Different jumper settings for master depending on how many drives on your chain.

With one minor exception, the Caviar WD400BB offers almost identical performance to most of the other drives. SYSmark 2000 and Disk WinMark testing showed scores that were higher in some cases, and only a bit lower in others. The disk transfer tails off a bit at the 40 GB mark, but not quite as much as a couple of the other drives (it actually splits the difference between the highest and lower-performing drives at this point of the test).

One quirk we noticed with this drive is that you have to rejumper it if you're changing it from solitary master to master on a chain with another drive—in other words, if you add another device to this drive's chain, it needs to be rejumpered. A bit annoying, but a small consideration, all other things considered. The drive's performance is, otherwise, very good.

5,400 rpm drives

Samsung SpinPoint SV4084H

From: Samsung Electronics Canada, Inc.
http://www.samsungcanada.com
Estimated street price: $225

- 40.8 GB formatted capacity
- ATA100 interface
- 5,400 rpm spindle speed
- Three-year warranty

Samsung's SpinPoint line offers reasonably good performance at a more budget-oriented price. While its disk transfer speeds weren't at the top of the heap, they were very competitive and in general, overall system performance is still quite good (numbers for application benchmarking, using SYSmark 2000, showed that the drop from 7,200 rpm to 5,400 rpm resulted in only slightly lower numbers under most real world uses, which means the Samsung drive should be perfectly adequate for most users).

Seagate U Series 5 ST340823A

From: Seagate Technology
http://www.seagate.com
Estimated street price: $215 (converted from US$135)

- 40 GB formatted capacity
- ATA100 interface
- 5,400 rpm spindle speed
- Three-year warranty

Though the model number is very similar to the 7,200 rpm Barracuda reviewed above, the U Series 5 is a completely different beast: slower spindle speed, different casing, and slightly lower performance. While there's certainly a performance difference noted in the Disk WinMarks section of our tests, the difference isn't so apparent in the SYSmark 2000 tests.

Bottom line: if you're looking for all the performance you can get, step up to the 7,200 rpm Barracuda, but if you're more interested in capacity, the U Series 5 model certainly provides reasonable performance, at a slightly better price (without generating extra heat inside your PC case).

External drives

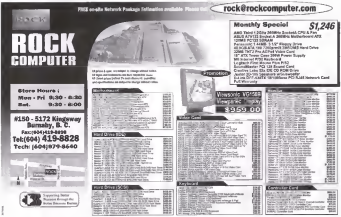
Sometimes there just isn't room inside your system for another drive. If this is the case for you, here are a few external options to consider.

LaCie U&I PocketDrive
18 GB / 28 GB / 38 GB

From: LaCie [illegible]
http://www.[illegible]
Suggested retail price: [illegible] $699 [illegible] 179

- Portable hard drive in [illegible] 23 and 30 GB capacities
- Has one USB and two FireWire ports
- Gets power from FireWire interface, and comes with AC adapter for use with USB
- Hot-pluggable
- Compatible with both PC (Windows 98SE and 2000) and Mac (OS 8.6 or later).
- Comes with Silver Lining Pro disk utility software
- One-year warranty

The devices in LaCie's PocketDrive series are essentially notebook-sized components placed into a special rubberized and ruggedized travel casing for maximum durability when you're moving them from one place to



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another. This makes them perfect for use while you're traveling, or even just for repeated moving from one workstation to another.

LaCie's U&I interface is designed for maximum flexibility. In addition to a USB port (the U), the U&I PocketDrive also features two FireWire ports (the I, as in IEEE1394).

Because the drive comes with two FireWire plugs, you can hook it up to the host, then chain other FireWire devices through it. In fact, this is just what we did.

When plugged into the back of the PC, the drive was instantly recognized (of course, this was because the drive was already formatted for use with the PC. Unformatted drives will need to be set up with fdisk, first), allowing us to start reading and writing data immediately.

LaCie U&I Hard Drive
20 GB / 40 GB / 60 GB
from LaCie Canada
http://www.lacie.com
Suggested retail price: $429 / $549 / $599

- External hard drives, in 20, 40, and 60 GB versions.
- Both FireWire and USB interfaces for maximum

Continued on page 46

Hard drive performance chart

	7,200 rpm drives					**5,400 rpm drives**	
	Fujitsu Picobird MPG3409AH-EF	Maxtor DiamondMax Plus 60 5T040H4	Quantum Fireball Plus 40 AS	Seagate Barracuda ST340824A	Western Digital Caviar WD400BB	Samsung Spinpoint SV4084H	Seagate U Series 5 ST340823A
Formatted capacity	40.98 GB	40 GB	40 GB	40 GB	40.8 GB	40.8 GB	40 GB
Interface	ATA100	ATA100	ATA100	ATA100	ATA100	ATA100	ATA100
Spindle speed (rpm)	7,200	7,200	7,200	7,200	7,200	5,400	5,400
Buffer	2MB	2MB	2MB	2MB	2MB	512KB	512KB
Max. transfer to/from media (MBps)	60.7	57	NA	67.5	58	42.875	41.25
Max. transfer to/from host (MBps)	100	100	100	100	100	100	100
Average seek time: read / write (ms)	8.5 / 9.5	8.7	8.5 / 8.5	8.9 / 9.5	8.9 / 10.9	9	8.9 / 10.9
Rotational latency (ms)	4.17	4.17	4.17	4.16	4.17	5.56	5.6
ZD Winbench 99 scores							
Business disk WinMark (Kbps)	7,020	6,690	7,090	7,090	7,240	5,980	5,070
High-end disk WinMark (Kbps)	22,400	15,300	20,900	21,700	19,300	14,600	16,200
Disk transfer rate: beginning (Kbps)	38,500	38,400	35,400	40,700	33,300	29,000	31,600
Disk transfer rate: end (Kbps)	26,000	22,800	21,500	26,400	23,500	16,700	21,200
Sysmark 2000 scores							
Internet content creation	218	217	227	216	218	207	210
Office productivity	179	225	227	226	253	216	216
Sysmark 2000	225	222	225	222	226	212	213
Bryce 4	275	65	27	271	269	253	269
CorelDraw 9	293	306	285	286	312	284	256
Elastic Reality 3	273	265	284	273	274	270	266
Excel 2000	253	246	257	249	257	231	227
Naturally Speaking Pref. 4.0	198	197	200	197	194	188	189
Netscape Communicator	219	209	208	208	214	202	214
Paradox 9.0	197	195	207	201	212	198	196
Photoshop 5.5	132	153	135	129	130	120	126
PowerPoint 2000	269	258	259	266	271	250	251
Premiere 5.1	235	232	237	229	234	219	209
Word 2000	192	188	192	192	194	179	189
Windows Media Encoder 4.0	215	220	221	215	219	215	218
Warranty	3 years	3 years	3 years	3 years	3 years	3 years	3 years
Price	$290 SRP	$260 street	$249 street	$275 street	$300 street	$225 street	$215 street

Test System:
Gigabyte GA-[illegible] motherboard, 1.2 GHz AMD Athlon processor, 256 MB DDR SDRAM, Creative GeForce2 Ultra video, Windows 98 SE, FAT 32, 12x Hitachi DVD drive and Panasonic floppy drive, integrated ATA100 controller and AC97 audio

Granite System
Intel Celeron2 667MHz FC-PGA CPU Retail
Elite P6STP-FL/WLAN SIS630E
FC-PGA/370 Motherboard ATX
64MB PC133 SDRAM
Panasonic 1.44MB 3 1/2" Floppy Drive
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8MB Integrated AGP Video
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Logitech 2B Mouse P/S2
56K V.90 Integrated Voice Fax/Modem
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Full Warranty
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$176 Special price with your system
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Ruby System
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GIGABYTE GA 7ZX Athlon/D
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Panasonic 1.44MB 3 1/2" Floppy Drive
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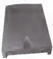
Minding the (data) store

Continued from page 45

Flexibility
- Drives inside are full-sized 7,200 rpm desktop drives.
- Compatible with both PC and Mac OSes.
- Requires external power
- Comes with Silver Lining Pro disk utility software



- One-year warranty

If ultraportability and ruggedness aren't major concerns, LaCie also makes external USB hard drives in its traditional blue case, which is a bit larger and externally powered, but still portable enough to move from one workstation to another.

The blue cases also stack nicely, so if you have other external LaCie products, like a CD-RW or DVD-RAM you can create a mini tower.)

Because the drive has both USB and FireWire interfaces, you have a lot of flexibility for connecting it to different PCs, though you should try to connect it to a FireWire adapter for maximum performance.

Even better, if you format the drive as a PC drive, you can actually swap it between PC and Mac platforms.

For this unit, you'll pay about twice as much as you would a bare drive, but for the sturdy casing and the interface flexibility it's well worth the extra investment.

Micro-Solutions Backpack Hard Drive 154xxx

From Micro-Solutions
http://www.micro-solutions.com

Suggested retail price: $399
- Comes with 20 GB drive.
- Uses either parallel or USB interface for data transfer
- Parallel port pass-through allows you to use other parallel devices, like printers.
- All setup and driver files fit onto one floppy (compatible with Windows 95/98/Me/2000).
- Installation requires system reboot, even if you use USB.
- Shows up as a "removable drive" in My Computer.
- One-year warranty

While not exactly a household name, Micro-Solutions has established a loyal following for its line of Backpack external storage devices, both hard drives and CD burners.

These devices have attached to existing systems solely by use of the parallel port, which was fast enough for transfer of data, but at the peril of the occasional conflict with other devices on the system.

The new models still use parallel as their primary means of communication with a PC, but new drives come with one of two alternatives: a PC Card adapter for use with notebooks, or a parallel-to USB connecter. We had a chance to look at the USB model.

If you prefer to stick with parallel (or if you're using Windows 95 and have to stick with parallel), you can certainly do so but the USB cable makes the new Backpack a lot more flexible.

Performance here is a bit slower than with an internal drive or an external FireWire version, but transfer of data seemed to be very reliable, with no buffering issues noted during

Affordable digital dictation

By David Tanaka

RCA's Digital Voice Recorder is a handy note taker comparably priced to microcassette memo takers. It uses removable SmartMedia memory cards. A 4 MB card comes with the device and it will handle capacities up to 8 MB.

Two levels of recording quality can be selected. The 4 MB card will hold about 36 minutes of recording at the HQ setting and about 95 minutes at SQ. The microphone sensitivity can also be set to two levels: conference and dictation.

An automatic voice recording mode can be selected, which stops recording after silences of about three seconds, and automatically starts again when the mic picks up a sound. The unit uses two AAA batteries (not included).

The recorder's basic operations are as easy to figure out as any tape recorder's, although the ability to organize voice clips into folders will be new to anyone coming from the analogue world.

The unit comes with a bilingual instruction manual that clearly describes the features and functions—although we discovered after some frustrating attempts that the instructions for deleting files were incorrect. Removable storage is a rare feature in such a low-cost device, and it's almost a cause for jubilation. Almost, because although the removable memory card is an industry-standard SmartMedia (SM) card, the data format is not.

This prevented us from downloading the recordings as audio data files because the PC could not read the card through the SM card reader we normally use to transfer images from a digital camera's SM card to the PC.

This file compatibility issue will not matter if all you want to do is record some thoughts or action items during the day, review them, then delete them.

Overall, the unit is simple to use and is one of the cheapest digital voice recorders on the market.

RCA Digital Voice Recorder
(Model RP [illegible])
From: Thomson Consumer Electronics
Sug. retail price: $89.99
Pros: Attractive price for digital recorder
Removable memory for extra capacity
Cons: Non-standard data format prevents moving files directly from memory card to computer

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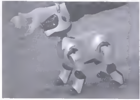
A boy and his dog

Continued from page 38

So with the pent up consumer demand caused by price and availability barriers, it was inevitable that toy manufacturers deluged the market with little critters that bore only a hint of the interactivity and learned individuality of the Aibo—but retailed for about $35



Son of Aibo

With the success of the ERS 110, Sony has released the ERS 210 the second generation Aibo, and the company is being a bit less modest about it.

These newer Aibos have somewhat wider availability (it can be ordered from Sharper Image and a few Sony stores in the U.S., as well as via the Web), and have a bit more media presence (you've likely seen it strutting on Fido's ads and Web site) As I entered Info Computer I thought that all this could signal an end to Aibo's anonymity

Once in the store, I met with Jacky Chan, Info Computer vice-president and all around affable young guy He said he bought his Aibo during a trip to Japan, and was planning to use it as an attraction in his other store

As I sat down in his office, he offered me something to drink, handed me an Aibo user's manual and quick-start guide then disappeared for a few minutes.

I already knew some of the specs before I opened the guide: it stands at just under 30 cm (11.7 in.) tall, is about 25 cm (9.75 in.) long, and weighs about 1.5 kg (3.3 lbs.) It runs Sony's Aperios real time operating system and packs a collection of sensors (touch, infrared and more) around its body so it can experience the world around it.

Aibo is powered by a lithium ion battery and uses a Sony Memory Stick to store its developing personality and learned behaviour What I didn't know was that Aibo includes a PC Card (Type II) slot for various accessories, and that this new model can communicate with first-generation Aibos Also, its red 8 MB Memory Stick isn't exactly the same as the light blue under Sony has been pushing for use on everything from digital video cameras to MP3 players—this one is specifically formatted for Aibo

I also discovered that reading about Aibo is nothing like seeing it I had just gotten to the part in the guide that explained how Aibo's tail and LED eyes indicate mood when Chan came back, plastic pooch in hand. He placed it on the floor turned it on, and with a studied languor it stretched out its limbs and yawned then groggily got to its feet while half heartedly wagging its tail. In retrospect, that was about the last time I referred to Aibo as an "it."

While Aibo walked around, I took careful note of his new look Compared to the original Aibo—not to mention every other robot dog—the ERS-210 is sleeker and more dynamic looking

Whereas the first Aibo looked like a toy dog carefully sculpted out of building blocks, this new model is more of a slightly cartoony abstraction of a dog. The net effect is that Aibo suggests movement even when he's sitting still, exhibiting what legendary Disney animators Frank Thomas and Ollie Johnston referred to as "the illusion of life."

Aibo explored the office, stopping to look at software boxes and table legs. It was amazing to watch. As the father of a nine-month old I recognized the cautious curiosity Aibo's body language exhibited. That that trait let alone the idea of body language, is recognizable in plastic and metal is mind boggling.

When Aibo made his way over to my foot, his lit up eyes scowled at my boot Like most dogs, he seemed to have figured out that I'm more of a cat person.

"He's still learning," offered Chan "He's not familiar with you yet."

Still, "learning" is hardly an expression you'd expect to use when discussing what is essentially an expensive toy, but that's what Aibo does from when he's first born (as the manual puts it) sightless and unsure of the world.

Chan pointed out that it took Aibo two days to learn to walk, and from that point on he is like any other baby creature: actively learning via his sight (through his infrared sensor and digital camera), and learning by praise and admonishments (through his touch sensors and stereo microphone)

Pat him gently and he appears happy, too roughly and he seems irate; give him time, and he'll learn 50 words, including his name

The user's guide breaks his life cycle down into four stages: babyhood, childhood, adolescence, and adulthood He hits certain developmental milestones as time goes on, but the most interesting is his ability to recognize objects and react to them.

When he starts chasing and playing with the included pink plastic ball, everyone in the store (by this time, we'd taken him outside the office) stopped and stared in rapt attention. Aibo couldn't have cared less He had a ball to chase.

Servo whine

It's easy to get caught up in what makes Aibo fascinating especially if you've read the manual. It's when people who don't know what to expect interact with Aibo that his shortcomings begin to show

While everyone tried to get Aibo to react to their calls or commands, it became obvious that when Aibo reacts to something (for instance, he waves when you say "hello") he can't be interrupted.

He has to completely finish one of the prefabricated or reactive movements before he can pay attention to his surroundings again. While waiting for him to finish something, you realize the individual movements are too slow and deliberate

It's pretty neat that he chases his ball, but when his head turned to follow its path when I rolled it, it seemed excruciatingly sluggish. The constant whine of servos from his 20 points of articulation also becomes a little irritating

It goes without saying that these will be improved over time. The question is, will Aibo and his kin eventually become so mainstream (and inexpensive) as to be unremarkable? It's hard to say

The back of the box holding the Aibo Life software and manuals has a headline which doubles as a bold claim. "Living with a Robot as Part of a 21st Century Lifestyle."

We might think of this as an amusing concept—*The Jetsons* Rosie crossed with Astro—but bear in mind that in Japan, the birthplace of Aibo, people tend to view robots in a kinder light than we do, hence the original Aibos selling out so quickly.

More to the point, the notion of an electronic pet originated in Japan, when the Tamagotchi was created to balance the human desire for companionship with limited living space and a hectic urban lifestyle

The Tamagotchi, as you'll recall, was a smash with kids over here as well as Japan, and it opened the door for other virtual critters like GigaPets, the Pokemon Pikachu Virtual Pet, and the aforementioned Aibo knockoffs.

I hesitate to make any predictions, as Aibo could either signal the beginning of artificial intelligence's entry into mainstream homes, or be remembered as a cute, passing fad.

On the other hand, Honda is touting its upcoming Asimo Humanoid Robot and no doubt Sony is already hard at work on a third-generation Aibo.

I doubt that a day will come when all of our pets are recharged rather than fed, but I suspect that at some point, Aibo and his kind are going to have to learn how to wrestle with the family terrier ❑

Emru Townsend (emru@pobox.com) would be first in line for a robot iguana

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Baby steps for recordable DVD

The promise of multiple gigabytes of storage on a platter the size of a CD has been delayed by tack of agreement on a single set of standards. But products are coming, slowly.

By Sean Carruthers

Right from the beginning, the recordable DVD category was on unsteady footing, with multiple formats battling it out for supremacy, including DVD-R, DVD-RAM, and DVD+RW

DVD-R

DVD-R, while it has been available in the marketplace since the introduction of the category, has typically been a very expensive solution aimed at professionals who wanted to make their own DVD ROM titles and DVD movies

The main drawback to DVD-R will probably be apparent to anyone who knows the difference between CD-R and CD-RW DVD-R is a write-only product, which means you can't change your data after initial writing.

For DVD authoring this is not an issue, but in terms of cost-effectiveness, it may leave a bit to be desired when compared to the other standards.

This is especially true when you look at the initial cost of the hardware, which has been in the thousands of dollars, if not tens of thousands.

This is bound to change in the very near future however Pioneer, one of the big players in this category, is planning to release a new lower priced model (under US$1,000) in May The drives Pioneer is currently shipping have appeared in Compaq and Apple computers.

At present, media comes in either 3 95 GB or the newer 4.7 GB capacities. The size you can use is dependent on the drive.

DVD-RAM

DVD RAM, which has had the most movement in the last three years, has been up until this point a format that has worked in DVD-ROM and other DVD-RAM drives, but has been incompatible with DVD video players (though this may change in the very near future)

Panasonic and Toshiba have been the biggest players in this category DVD RAM has been available at a reasonably consumer-friendly price (if you can consider $1,000 consumer friendly) for more than three years, and has already gone through more than one generation in the public eye

Initially, media was available in 2 6 GB capacities (5 2 GB if you used double sided media) New drives are capable of handling 4 7 GB media (and twice that, or 9.4 GB, for double-sided media)

Single sided media is available in a bare disc format, and double-sided media is only available in a plastic transport cartridge

DVD+RW

DVD+RW has been the most turbulent of the three technologies, with almost nothing available for consumers

In September 1999 Hewlett-Packard teased the computer world by announcing products using the first generation of the DVD+RW standard but withdrew the products before they'd even started shipping.

At the time, HP instead opted to continue working on the product and release it into the market when a higher-capacity next-generation product became available

Now nearly two years later there are rumblings that HP is about to relaunch DVD+RW products, but there was very little hard data available at the time of writing Keep your eyes open for updates

The first (aborted) generation of DVD+RW used 3 GB single-sided media and was incompatible with DVD video At the time the product was withdrawn, the second generation was scheduled to handle 4 7 GB media, and promised compatibility with DVD video

Other companies supporting DVD+RW include Thomson/RCA, Philips, Ricoh, Sony, and Yamaha.

Products

So, what's available now? We got our hands on a few products, all of them in the DVD-RAM camp

Panasonic LF-D211 / LF-D201U
From Panasonic Canada
http://www.panasonic.ca
Suggested retail price: $750 / $800

The LF-D211 is an internal model, using an ATAPI interface, and the LF-D201U is an internal SCSI drive Both handle 4 7 GB media, including the 9 4 GB double-sided cartridges (you just have to flip the cartridges manually)

When plugged into the IDE chain, the drives show up as two drives in your My Computer window one is an optical disc, and one is a removable drive; this may be a bit confusing at first, but reflects the dual nature of the DVD RAM drive

The tray for DVD media is versatile, accepting either cartridges or bare disks. Although the 9.4 GB media must remain in the plastic transport and can only be used in DVD-RAM drives, the 4 7 GB media can be used in compatible DVD ROM drives (Panasonic drives support DVD-RAM media)

The DVD-RAM drives themselves will only record to DVD RAM media, but for playback they will accept a wide variety of media including DVD RAM DVD ROM, DVD video, DVD audio DVD R, as well as all of the flavours of CD (including CD-RW) The drives are compatible with Windows 95, 98, NT, Me, and 2000

With the new faster IDE interfaces, users will see little performance difference between the ATAPI and SCSI versions of DVD RAM, so it mostly comes down to personal taste and resource availability The 4 7 GB media is $39 ($45 with the transport cartridge), and 9 4 GB media is $69

LaCie DVD-RAM FireWire
From LaCie Canada
http://www.lacie.com
Suggested retail price: $1049

Unlike many of LaCie's other current products, the DVD RAM drive uses a FireWire interface only (as opposed to the combination FireWire/USB) because of the bandwidth limitation of USB (12 Mbps compared to FireWire's 400 Mbps) A SCSI version is

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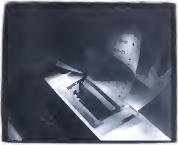

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invent

Today's menu: rack of HD

By Sean Carruthers

While 40 GB is way more than enough storage capacity for most home users there is a group of users that requires far more space typically those in the small business world. Snap Appliances is an off shoot of hard drive manufacturer Quantum Corp. and Snap offers larger storage solutions that are network attached.

Quantum Snap Server 4100

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http://www.snapappliances.com
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The Snap Server comes in three different models. The Snap Server 1000 is the more compact unit, starting at 15 GB with a price tag of US$499 The Snap Server 2000 increases the storage capacity to 60 GB and runs US$1 699 The Snap Server 4100 is the top-of the line model, with a capacity up to 240 GB and prices ranging up to US$4 499

Both the 2000 and 4100 have more than one internal hard drive and both support RAID (backup and volume-spanning) though only the 4100 supports RAID 5

The appliances come with a single built in 100Base-T Ethernet connection If you have a DHCP BOOTP or RARP server on your network, the Snap Server will automatically obtain an IP address and with the installation of client software on at least one machine you can have it up and running on your local network and configured to receive data within minutes.

The devices support TCP/IP IPX, NetBEUI, AppleTalk, NFS and HTTP connections. (The last can be used to configure the device.) This wide range of default support options means Snap Server appliances will fit comfortably into almost any group of users with any platforms—even if the office uses multiple platforms

If the prices seem intimidating, it's because this isn't just a simple hard drive bundle. Snap Servers are set up for use with multiple users (lists of up to 100 000 users can be pulled from an existing NT Domain Controller) as backup or as additional storage. The DataKeeper software bundled with the appliance can be set up to automatically back up client PCs directly to the Snap Server on a fixed schedule among other features.

Each user can be set up with specific quotas, and the device will notify users and/or the system administrator when there is a space problem on the device.

We had a chance to look at the Snap Server 4100 which comes in a rack-mount format, and is designed for use in any environment where massive amounts of data need to be backed up or accessible to an entire group of users. (For example software and multimedia development, a Web or news server at an ISP or even just the backup box for all of the workstations in a reasonably small office.)

The 4100 set up on our network quickly immediately pulling down an IP address from our NT box. Client software set up on one of our PCs immediately located the box and sent back information about the device's status. Because we received hardware that was slightly older than a newly released version of the software, Snap sent us an updated CD-ROM with the new operating system

Upgrading to this new OS was quick and easy, and didn't require our intervention (good to know for when the next OS upgrade comes) From there it was smooth sailing

One thing to keep in mind if you plan to add something like this to your network you have to make sure that your network supports 10/100 if you want to get the fastest performance out of this box.

While it will quite comfortably work on a 10Base-T connection transfers to and from the box will be quite a bit slower

—Sean Carruthers

IEEE 1394: Setting the wires on fire

Most people have likely heard about FireWire (also known by its more technical name, IEEE 1394), but probably haven't used a machine that employs the technology.

With a few exceptions, PC manufacturers have been more than content to stay away from FireWire and stick with USB which is much cheaper to implement, and enjoys broader compatibility in the world of peripheral devices

Specialty machines for multimedia (such as the iMac DV) have incorporated FireWire as a standard part, but users of most other systems have to get an add on card to get FireWire into their PC.

Why would you want a FireWire-enabled PC? Most modern computers already feature USB, which offers a reasonably high speed method of getting data in and out of the PC as well as plug and play ease of installation

FireWire on the other hand uses the same plug-and-play method of connecting devices, but increases the speed of the data transfer to a whopping 400 Mbps compared to USB's 12 Mbps.

The next revision of USB USB 2.0 is expected to boost speeds to 480 Mbps, suggesting that the competition is far from over.

What FireWire has now, however, is a stable interface and a fairly good selection of devices to make use of the interface's high maximum bandwidth.

For users involved in multimedia production, FireWire may be the best option, with the FireWire port doubling as the connection for a digital camera as well as any peripherals that you may want to attach (such as a hard drive, a removable drive or rewritable optical drive, as well as other potentially high-bandwidth devices like live Webcams)

Adaptec (http://www.adaptec.com) was kind enough to send us the FireConnect 4300 card for testing this month It's a PCI card that is designed to work in either PC (Windows 98SE, 2000 and Me) or compatible Macs (MacOS 8.6 or later)

The card installed easily using the driver built right into Windows 98 SE, and we were immediately able to plug in and start using FireWire devices.

More information is available at Adaptec's Web site

—Sean Carruthers

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Baby steps for recordable DVD

Continued from page 50

also available

The external drive functions just like an internal version, setting up two separate icons in your My Computer window (an optical disk icon and a removable drive icon). You can format the drive, then drag and drop files onto it, just as you would with any other removable drive or fixed hard drive.

The LaCie drive comes with drivers for both Windows and Macintosh. The media tray is dual-design, and will accept either cartridges or bare disks.

Installation of the drive was fairly straightforward. we plugged it into the FireWire port on the back of our test PC, installed the relevant drivers from the Windows 98 CD-ROM, and it was recognized as a drive on the system.

As with any DVD-RAM drives, you have to install extra software to actually use to record data, and installation of this software was also quick and straightforward.

Within 10 minutes (following a quick format of the media) we were copying files to the DVD-RAM drive by dragging and dropping from the normal Windows desktop.

As with other LaCie external products, this drive is more expensive than an internal solution with similar specifications, but the cost is actually comparable to other external DVD-RAM products.

For those who want to be able to move the drive from PC to PC as necessary the extra investment is certainly worthwhile, especially with the FireWire interface and the interoperability between PC and Mac. ❑

TCP Test Lab

Making your hard drive removable

Almost everyone is familiar with hard disk drives and many people know about removable storage solutions like Zip or LS-120 (also know as SuperDrive). Not as many people know that you can actually turn a hard drive into a removable device fairly easily.

Removable hard drive kits are available from a few manufacturers, in a few different models. We asked Canadian company TechCraft (http://www.techcraft.com) about these kits and discovered that in addition to basic mounting bracket versions that feature only a removable drive bay, there are also models that came with heat sinks and cooling modules, to better dissipate the heat generated by newer faster and hotter hard drives.

TechCraft supplied us with one of its removable hard drive kits to test this month.

To install one of these kits, you will need a free full-size bay (same size as your CD-ROM drive bay) and at least one spot left on your IDE chain. It's important to make sure you get the right type of interface—older kits may only work with ATA33 drives running at maximum spindle speed of 5,400 rpm though newer ones handle up to ATA100 and 7,200 rpm.

It's also important to make sure you have reasonably good air circulation in the area the kit will be installed, even though some of these kits include a cooling fan it won't do much good if it's right up against your power supply and there's no place for the heat to dissipate.

Installation of our sample kit was fairly easy, and the bracket installed cleanly into our test PC. The IDE cable plugs into the back of the bracket, which then connects to the hard drive when the drive module is inserted. (Note you don't have to jumper the bracket for master/slave settings because it uses the jumper settings on the hard drive itself.)

The hard drive enclosure then slides in and out of the bracket on guide rails and can be locked into place with a key. While the bracket/cartridge docking setup is not technically hot swappable, you can download drive management programs that can be used to make the setup hot swappable. Similar programs already exist for notebook computers.

There are a few advantages to having a removable hard drive. First, you can use your removable drive as a backup device for your main drive and store the removable drive in a safe place.

Second, you can actually use the removable drive as your primary hard drive which makes it very easy to switch between operating systems (just plug in the other hard drive and restart the PC) or to protect your data when you're not at the machine (just remove the drive and lock it up).

Either way, you can also use different drives for different operating systems and switch between OSes as necessary by swapping drives. You can buy extra brackets and extra cartridges, to use multiple drives on a single machine or to share a single drive among multiple machines. The latter option is especially helpful in a small office where multiple machines have to be updated by the IT person on a fairly regular basis now the IT technician only has to have one drive with the proper information, and move it from PC to PC, slide it into the removable bay and update as necessary.

Pricing for the kits range from about $50 for a very basic model without cooling fan and up to $200 for a SCSI model that has a heat sink, two cooling fans, and the ability to handle drives with spindle speeds up to a fiery 10,000 rpm (hot, hot, hot).

The kit we looked at checks in at just under $100 and should be sufficient to meet most users' needs. More technical data and model information is available at TechCraft's Web site.

—Sean Carruthers

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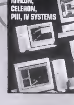

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- WIN98 KEYBOARD
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- 56K V90 PCI MODEM

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- WIN98 KEYBOARD
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- Win98 Keyboard
- 2B WHEEL Mouse
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- SB ENSONIQ 128 SOUND
- 56K V90 PCI MODEM

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LEXMARK Z32/Z42/Z52	$99/149/219
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MICROTEK V6UPL/12USL	$190/442
CANON N650U/D68U	$144/219
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UMAX E3420/E3470	$156/180

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The Computer PAPER

Tech Enterprise

Technology Solutions for Small Business • Connecting Home & Work

The 'P' in PDF means portable

Adobe Acrobat proves to be a great tool for the Internet age, offering reliable electronic transfer of documents with full formatting intact

By Marvin D. Silbert

I'm a consultant whose work requires exchanging reports, drafts and other documentation with clients When the Internet came along, I started attaching this material to email.

It was great to see my courier and postage costs plummet When someone sent back a marked up copy, however, I realized there were some serious problems associated with sending files electronically

In one case, I sent a 50-page report that was loaded with tables and graphics. The recipient's system moved the last line of page 2 to the top of page 3

The tables and figures then started jumping pages and all the page references were wrong The Greek characters and mathematical symbols just disappeared.

Let's face it, no two word processors produce identical output when the document carries any fancy formatting or gets printed on an inkjet rather than a laser printer I was thinking of going back to sending hard copies until I discovered Adobe Acrobat, which lets me prepare documents as PDF files that will look the same no matter where they are printed. PDF stands for portable document format, and it is true to its name

I had the ideal opportunity to put Acrobat to the test last fall when I prepared a presentation and sent the file to the Washington-based organizers of an upcoming conference in Hawaii.

When I arrived at the conference in Honolulu a few months later, the copy of my presentation in the conference proceedings was indeed identical to the original.

In praise of Acrobat

Most people already have part of Acrobat on their systems in the form of its display component, Acrobat Reader

To create PDF files, however, you need the full version of Adobe Acrobat, which, unlike the Reader is not free, but a hefty $350 plus. (Note: Adobe says the latest version, Acrobat 5 0, is expected to be available at press time

Continued on page 60

Canadian online sales up as many sellers retreat

OTTAWA—For every two Canadian businesses that began selling products or services online in 2000 five other companies packed up their e-commerce efforts, according to figures released in early April by this country's official data gatherer, Statistics Canada (http://www.statcan.ca/)

Statistics Canada (Statscan) reported that its *Survey of Electronic Commerce and Technology for 2000* found that just six percent of Canadian businesses reported any effort to sell over the Internet—and that even includes sales without online payments In 1999, the same survey found that 10 percent of businesses were attempting to sell online

But the latest survey also found that the fittest appear to be surviving, with the total value of sales for those who remain soaring to $7.2 billion in 2000, up 73.4 percent from $4 2 billion the previous year

Because many businesses responded to the survey in both 1999 and 2000 Statscan said it was able to estimate the performance of the companies that dropped out of the race for e-commerce riches. It said the combined 1999

Continued on page 65

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32MB TNT2 AGP	10/100 Build-in Lan	52X CD ROM	52X CD ROM
3D Sound Pro	128MB SD RAM	Sound Blaster Live	Sound Blaster
56K Fax/Voice Modem	20GB HD	56K Fax/Voice Modem	56K Fax/Voice Modem
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52X CD ROM	18" ATX Case		
	Celeron 600/700/566/633/668	PIII 933/1.0GB $999/1098	AMD 950/1000 $988/1058
	Celeron 733/766/800/8/718	P4 1.4/1.5 $1818/2490	AMDtbb 1.0/1.2 1198/1298

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ATI Radeon LE AGP Video, **32MB** DDR
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Quantum 30G AS 7200rpm	$206
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WesternDigitals 30G/40G	$179/195
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WesternDig 20/40G 7200	$169/229

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Brother HL 1250DX	$549
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HP 1200 Laser Printer	$699
HP 4050TN Laser Printer	$2299
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after Rebate

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The 'P' in PDF means portable

Continued from page 58

for US$249 or US$99 to upgrade from an earlier version.)

The installation involves little more than a click or two and gives you a pair of virtual printers called PDFWriter and Distiller. Take both when asked. Once installed, you prepare your document or spreadsheet as you normally would, but print to PDFWriter or Distiller instead of your normal printer.

As each virtual printer has its own spacings, it's a good idea to select the printer first and check the document layout before you start printing. You will be asked for a filename and where you'd like it to be saved on your system, or it can select these for you. If you are familiar with the menus on Acrobat Reader you will find that they are similar but more extensive on the full version. The full version allows you to move pages around, exchange them with other PDFs, and crop a table or paragraph to fill a page.

I've prepared PDFs from several spreadsheet, text, and graphics programs and the problems I encountered were usually related to the choice of fonts. Your recipient must either have the fonts you choose on their system or you must embed them into the PDF file before you send it. Usually that doesn't present much of a problem as just about every PC in the world has Times New Roman and Arial fonts installed. Many other fonts can be embedded and that operation is almost automatic. When you embed several complete character sets, however, the files can be rather large. On the other hand, it will embed only one character if that's all you use.

Making a PDF from a Corel WordPerfect file turned out to be the major challenge. When I wear my consultant's hat, I prepare technical text that uses many of WordPerfect's 1,500 technical and foreign language characters. Unfortunately, Corel has blocked their use in PDFs. This may protect them from copyright infringement, but does Corel really think people would want to use WordPerfect with one of its greatest strengths turned off?

If that's not absurd enough, it gets worse. WordPerfect 9.0 actually has a feature called Publish to PDF. I tried it and ended up with an absolute mess with text repeated three times on each line and the graphics and symbols gone. Printing to PDFWriter was better, but not good, as it couldn't handle the special characters. It took a lot of effort to find a way to prepare a PDF from WordPerfect that included all the fonts and graphics.

On the Adobe Acrobat CD-ROM, there is an additional program called Adobe (Default) Postscript Driver tucked away in the \utilities\drivers\win95&98\ subdirectory. You need that additional virtual printer to work with WordPerfect.

Check the version before installing it. The version on my CD-ROM is 4.2.4. If that's the one you have, it has a bad habit of dropping the endings from words randomly throughout the document—for example "cooling tower" could become "cooli tower". The newer drivers seem to have overcome that problem. Go to the Adobe Web site (http://www.adobe.com) and download version 4.3 or anything newer if they have it.

To make a PDF from WordPerfect you can select this Postscript driver as your printer. It knows what to do next.

When you print to Acrobat, the disk drive comes to life and the Adobe Assistant icon appears in the Windows taskbar tray. When it's finished, the Reader comes up and displays your document. It's quite interesting to look closely at that display.

Certain standard fonts are considered as being present on all Windows and Mac systems and when you use one of them, they will be printed as text.

Many other fonts aren't considered as standard and they are converted to an image, a picture of the font. It takes longer to print graphics than text on screen and if you have a lot of non-standard fonts, the screen write can be quite slow.

This tends to force you, whether you like it or not, to keep to Times New Roman and Arial for the main text.

The graphics are based on a 72 dpi screen resolution rather than a 300- or 600-dpi printer resolution. Your recipients will be able to print a good sharp image on a 600 dpi laser printer and if the graphics contain any cross-hatching, it will look like cross-hatching.

I've never found a simple way to extract a high quality graphic image from a PDF file. It always ends up as a low resolution graphic. In a way that protects you from anyone who wants to use your figures for their own purposes.

Adobe's free distribution policy for the Reader has made the PDF a universal standard for sending manuals, reports, and technical literature.

If you decide to make and distribute your own PDFs, you don't have to worry about whether your recipients will be able to open and read your files. Most people have the Reader installed on their PC and will be able to see what you prepared exactly as you prepared it.

I include PDF documents on my Web site, ready for anyone in the world to read. How do I handle European and North American paper sizes? Each user can tick off the box in

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T/bird 1300 / 1133 $1125/1099
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Celeron 800 $349

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Pentium-III 750/ 800 w/Gigabyte MB $344/399
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Gigabyte 7ZM / 7ZMM Socket A $145/159
Gigabyte 7ZX E / 7ZXR Socket A $159/215
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MSI K7T Turbo/Turbo R/K7T Pro2A $169/195/162

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Quantum 20/ 30/ 40 GB 7200rpm $165/199/235
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933 / 1000	305 / 309
600 / 700	179 / 229
750 / 850	236 / 299
Pentium 4 1.3 / 1.4 / 1.5	539 / 809 / 1049
Duron 750 / 800	98 / 108
850 / 900	135 / 165
T-Bird (200mhz) 850 / 900	180 / 189
950 / 1000	230 / 249
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50X Aopen CDROM
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Aopen AK[illegible]	$[illegible]
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Asus A7V A7V133/A7A266/P4T	$[illegible]
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17" Tower Case
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3D Stereo PCI Sound
120W Amplified Stereo Speakers
A4 2 button Mouse

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Window 98 Keyboard
Samsung 17" 750S Monitor .24(H)mm
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PCI 3D Stereo Sound
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Panasonic 1.44 MB Floppy Drive
Windows 98 Keyboard
16" 250W Tower Case
Acer 50X UDMA CDROM Drive
3D PCI Stereo Sound
120W Amplified Speakers
A4 2-button Mouse

$1249 PIII 1G
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$1215 PIII 900
$1299 PIII 900
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$1130 PIII 733
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Acer 50X UDMA CDROM Drive
16Bit 3D Stereo Sound
120W Amplified Speakers
A4 2-button Mouse
10/100 Network Interface
56K V.90 Int. Voice Fax Modem

$899

OPTIONS
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M5 Windows Millennium +$139
Canon BJC 2100 *after rebate +$45*

Intel Pentium III
666 MHz System

Intel Pentium III 866 MHz CPU
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Panasonic 1.44MB Floppy Drive
Windows 98 Keyboard / 120W Speakers
Samsung 17" 750S 1280x1024 Monitor .24(H)mm
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Acer 50X UDMA CDROM Drive
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NEC FE700 17" .25mm	$345
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Epson 875DC Photo Printer	$275
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Brother 1240 DX Laser	$459
Brother 1270N Laser 12ppm	$739
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Brother 1670N Laser 16ppm	$1149

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Samsung 17" 700 IFT .20mm(H)	$409
Samsung 19" 955 DF .22mm(H)	$465
Samsung 15" 570V LCD	$749
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Hewlett-Packard opens portal for small business

By Tom Venetis

Hewlett Packard (Canada) is looking to its newly launched BizTown (http://www.biztown.ca) portal to give it a much needed insight into the needs of Canadian small and mid-sized businesses.

The long-term goal for BizTown is to create a portal through which Canadian businesses can turn to HP for their technology needs, as well as providing business with a means to collaborate and share information with each other. The portal also provides access to a print-on-demand service and online backup.

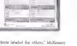
"My overriding philosophy is for HP to take care of the technology so that businesses can take care of their business," says Josephine Allan, small business development manager for HP, in Mississauga, Ont. "There are two key guiding principles: one is helping them resolve technology issues or concerns and the second is using technology to simplify their lives."

BizTown's real-time collaboration environment was developed jointly with the Toronto-based Venngo Inc., a provider of virtual business network (VBN) solutions.

"A big part of the portal is to help companies meet each other in a structured manner," says Craig McKenney, Venngo's chief executive officer. "What is happening is that you are now expanding your sphere of influence and your sphere of confidence."

McKenney says the ultimate goal of the gateway is to help participating businesses find new market opportunities and increase business contacts. BizTown participants are not restricted to working with those who are using the portal, he notes.

"The icing on the cake is that this site is connected to a bunch of other sites that we have private labeled for others," McKenney adds. "There are about 25 right now."



Venngo is also adding customization features to the portal so users can control the information they receive. As well the administration features allow users to act as experts on a topic or for HP to offer its own experts that BizTown participants can consult with.

"We have a panel of experts [on topics] ranging from technology, marketing, and starting up a business," adds HP's Allan. "You can ask them how to market a business on a shoestring budget and the expert will respond back."

HP hopes the portal will give it some insight into the concerns and issues facing small to mid size operations in Canada. To that end, it is creating an advisory council of 19 business owners, directors, and officers from companies with five to 99 employees.

"The intent is to create a group of creative, forward thinking individuals with national representation that will be able to help guide us in setting our investments, resources, and strategies to better cater to their needs."

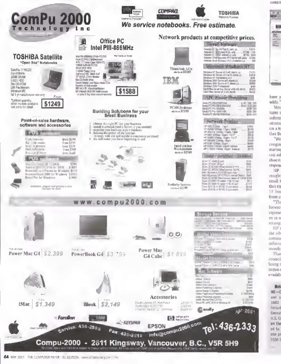
HP is currently recruiting participants for the advisory council. Members are asked to commit to the council—which will meet informally via the Internet—for a nine month term.

Those interested in joining the advisory council need to send a 100 word essay outlining their skills and expertise. Details of the requirements and BizTown contacts are available at the portal. ❑

Bringing 1900 to the 21st century

NE—Genealogy.com, a genealogy research and software company, has released more 1900 U.S. Census records. This addition includes 14 new states placed in Genealogy.com's existing online database of U.S. Census Bureau microfilms. Data available on the site by subscription has now expanded to 53 million names from 24 states. The site promises to deliver data from the entire 1900 U.S. Census by June.

http://www.genealogy.com



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Canadian online sales up

Continued from page 58

sales of the also-rans was just a little more than half of the revenue generated by the newcomers in 2000.

Statscan's e-commerce survey is based on questions sent to a sample of 21,000 businesses covering all standard industry classifications, from agriculture to warehousing.

Despite the large increase in the volume of online sales, Statscan said those revenues account for just 0.4 percent of all private-sector revenue. Only two sectors generated more than one percent of their revenue online—private-sector educational services (2.6 percent) and transportation and warehousing (1.5 percent).

Measured in dollars, manufacturers (with $1.3 billion in sales) and wholesalers ($1 billion) had the biggest online hauls. No other sector made that billion-dollar club, but transportation and warehousing were close with $990 million, followed by retailers with $890 million.

Statscan said the lion's share of online revenue for manufacturers went to those making transportation equipment. Likewise, machinery, equipment, and supplies wholesalers accounted for most online revenue in their sector.

Among retailers, motor vehicle and parts dealers plus food and beverage outfits accounted for over two thirds of e-commerce sales, Statscan said, adding that less than one percent of those food sales went to consumers, since the category includes store and restaurant franchisers.

"While the proportion of businesses selling online was lower in 2000, the percentage of Canadian businesses purchasing goods or services over the Internet was higher," Statscan wrote in its report. "Eighteen percent of firms bought goods or services over the Internet, up from 14 percent in 1999."

Statscan said businesses that did no buying or selling on the Internet were most likely (58 percent) to report that a product or service did not lend itself to online transactions. Thirty-six percent said they wanted to "maintain their current business model," while just 14 percent said that security was the stumbling block.

Twelve percent said setting up an e-commerce operation would be too expensive, and just over 10 percent said they lacked the skilled employees required for the task.

While few businesses were selling online in 2000, many (25.7 percent) had a Web site up and running. That was up from 21.7 percent in 1999.

Just over 59.7 percent of businesses in the education services industry had Web sites, an increase of nearly 26 percent over 1999.

That growth allowed the sector to slip past the information and cultural industry, in which 54.5 percent of companies had a Web site in 2000, down from 61.7 percent in 1999.

Although transportation and warehousing businesses generated $980 million in online sales, just 13 percent of companies in that sector reported having a Web site.

—*Newsbytes*

The 'P' in PDF means portable

Continued from page 60

the Reader preferences menu that tells it to make the page fit their paper.

I sell training courses, so instead of printing out, binding, and lugging course material across the country, I send the files ahead and when I arrive every attendee has a copy.

The WordPerfect version of my Statistical Process Control course is 12 MB, the PDF fits on a floppy disk with space to spare. It will also whiz through the Internet with a lot less effort than the original WordPerfect file.

As versatile as your ingenuity

Acrobat is a program that grows on you as you find more applications for it. A client needed an invoice in a hurry so I printed it from Lotus to PDF and emailed it. Now I do this all the time.

I found another little-known use for Adobe recently when I gave a seminar at York University. As we set things up, we discovered that my notebook PC wouldn't speak to the projector and the university's computer wouldn't read my Lotus Freelance slide show. It took a few seconds to make a PDF file that the university computer *could* read.

Open the resulting PDF file with Acrobat Reader and press Ctrl-L and you have a slide show. Other than a few very minor colour variations, the Acrobat slide show was identical to the Freelance slide show.

Acrobat has now become my preferred route for preparing a slide show as its editing features allow me to combine a spreadsheet graph with a Freelance drawing, a GIF image, and a WordPerfect table into a single slide show. Try that with PowerPoint.

Acrobat is the ideal, if not the only product for exchanging paper electronically that gives you any confidence that what you sent is what they'll see and print out at the other end.

I've made several hundred PDFs and the only serious flaw I could find was the high price. Adobe might sell many more copies with a lower price.

This is a program that grows on you as you use it. It will also pay for itself one document at a time as each email attachment eliminates a postage or courier charge. ❑

Instant messaging on your phone

Thanks to recent agreements between AOL Canada (http://www.ao.ca/) and two cellular phone companies, instant chat from your cell phone is now possible.

In mid March, Telus Mobility and AOL Canada announced an agreement that will give Telus Mobility subscribers access to AOL Instant Messenger services from their phones. A month earlier, a similar agreement was reached between AOL Canada and Rogers AT&T Wireless.

The service is called AOL Mobile, and includes instant text chat, plus Web phone formatted channels for news, sports, and weather.

Phone subscribers will need the proper Web-ready phone, so existing subscribers may have to upgrade, but the service is free and just requires a download of the Instant Messenger software from AOL Canada's site.

Access to other AOL services, such as email, will require a subscription, however.

—*TCP Staff*

Masters of their own voice domains

NB—The Web Directo software from AboutVoice is a free plug-in for users of Microsoft's Internet Explorer. Once installed on a sound-enabled PC with a microphone, they can simply say "Audi," for example, to go the automaker's Web site. Where AboutVoice aims to make its money is by selling audible domains to businesses. However, they're not cheap—about $150 US a year, $75 for each additional word or phrase pointing to the same traditional Internet address.

http://www.aboutvoice.com/

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Ottawa helps fund CANARIE's e-commerce trust programs

OTTAWA—A Canadian effort to develop and promote trustworthy business practices for e-commerce outfits has received a thumbs up and some funding from the federal government.

CANARIE Inc (http://www.canarie.ca/) Canada's non-profit advanced Internet development organization said in late March that it will allocate some of its $10 million E-business Virtual Clusters Program fund to help kick start the Canadian Online Trust Project (COTP)

COTP lists the Consumers' Association of Canada (CAC, online at http://www.consumer.ca/) as the lead on the effort, but it is also backed by the Retail Council of Canada and organizations representing telecommunications companies and Internet service providers. Additional financial support has already been provided by Bell Canada, the Canadian Marketing Association and the consumer protection agency for the province of Quebec, L'Office de la protection du consommateur (OPC) du Quebec.

CANARIE said it will kick in over $200 000 from its fund, which it administers on behalf of the federal government's industry ministry.

COTP says its aim is to increase consumer confidence in online commerce and, as a result, to boost business-to-consumer (B2C) activity on the Internet.

CANARIE said that Canadians make up one of the most-connected populations around the globe, but it trails the U.S and some other countries when it comes to online transactions.

"By helping overcome consumers lack of trust and confidence in dealing with online vendors, the COTP will address this serious impediment to the growth of B2C electronic commerce and help develop good online business practices" Amanda Maltby, a Canadian Marketing Association representative said in a statement.

CANARIE said the COTP effort will comprise two phases: "the development and promotion of a code of best online practices and the development of a national standard."

"In the short term, the COTP will establish a baseline of good online business practices to be promoted, notably to existing and future seals programs that accredit vendor Web sites" CANARIE said. "OPC du Quebec initiated the second phase of this project and has been actively promoting the development of a standard for more than a year."

—Newsbytes

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Windows PS2 keyboard
PS2 wheel mouse

ACT THUNDER
AMD TB1133(266)$1465
Or Monthly Lease $65
ACT 18" 300W tower w/2nd fan
Asus A7V133 ata100 mainboard
PC133 256Mb SDRAM
Asus V7100 Geforce2 MX 32Mb
Maxtor 40G 7200rpm ata100 H D
Panasonic 1.44Mb floppy drive
Creative 52X CDROM drive
Sound Blaster Live Value digital
USR 56K v 90 fax modem
or 10/100m network card
Altec Lansing AC333 spks w/sub
Microsoft Natural keyboard
Microsoft Intellimouse wheel

OPTIONS Windows ME+$139 Windows 2000 Pro+$199 upgrades CDrom to DVD+$ 49 Add Panasonic 8432 CDRW and s/w+$139

Motherboard Warehouse!

ASUS
CUV4XC/E $158/175
CUV4X-D $229
CUV266(w/ 128MDDR)$348
CUSL2-C(i815 ata100) $179
CUSL2(i815 ata100) $218
CUSI FX(video/sound)$129
A7V133(KT133A) $200
A7A266(Ali 266M ddr)$259
P3V4X(Via133) $180
P4T(i850 P4 ata100) $456

FIC
SD11(ata slot a Athlon)$179

MATSONIC
M754 (all in one PGA) $119
M666(via694X a370 S)$129

ABIT
KT7A/RA(KT133A)$219/239
VH6/2(via133S370)$145/158
VP6(133 Dual S370) $249
SE6(i815e ata100 4x) $199
SA6(i815ep ata100 4x) $189
SA6R(i815 ata100 raid)$235
BE6/2(BX slot 1) $189
SH6(i815e slot 1) $229

IWill
KA266 DDR 266M $289
KA266R DDR 266 raid $269
KK266 266M SDR $209
KK266R 266M SDR raid$229

ACER
AX34 (via133 ata66 sound) $120
MX34(via133 ata66 sound) $125
AX3X(i815e video sound) $179
AK53(KT133 ata66 sound) $159
MK33(KT133 ata66 sound) $145
AK73Pro(KT133 ata100) $180
AK73Pro1284(KT133) $236
AK73Pro A (KT133A) $189

QDI SPEEDEASY
Advance 5 133M ata66 slot1$110
Advance 10/133 ata66socket$148

SPACEWALKER
661P (A1 super7 dimm&simm)$128
HS61P(ATX 440BX) $158

SOYO/M-Tech
eVBA106 $189
6VCA(via133 slot1 ata66) $180
7VCA(via133 pga ata66) $180
7AIA(ATX via133 Athlon) $228

EPoX
8KTA2(KT133 ata100) $179
8KTA3(KT133A ata100)

GIGA-BYTE
6VX(7-4X(133 4x s370) $118
7DX(AMD761 DDR266) $209
6OXM7E(i815e ata100) $189
7VX4(AMD751 s462) $118
7ZM/M(KT133 s462) $139/189
7ZX(133 socketA 4xpci) $178
7ZXR(133 socketA ata100)$198

TYAN
Trinity400(VIA133 Slot1&S370)$159
Trinity 2390(KT133 socket A) $189

MicroStar
K7TPro II A(KT133 ata100) $163
K7TTurbo(KT133A ata100) $178
K7TTurbo R(KT133A ata100) $208
815E Pro(i815e ata100) $159

CPU

PentiumIII	Retail/OEM	Celeron	Retail/OEM	AMD TBird	Retail/OEM	AMD Tbird	Retail/OEM	AMD Duron	Retail/OEM
700(FC-PGA)	$225	566A(FC-PGA)	$89	850	$169	1133(800)	$359 / $299	700(socketA)	$88
866(FC-PGA)	$299	667A(FC-PGA)	$129 / $136	900	$218 $189	1200(266)	$399 / $319	750(SocketA)	$88
933(FC-PGA)	$349	733A(FC-PGA)	$149 / $159	1000	$299 $249	1333(266m)	$410 / $389	800(SocketA)	$139 /$109
1000(FC-PGA)	$389	Pentium4 1 3GHz	$619	1000(266)	$299 $249			850(SocketA)	$169 /$129

PRINTER/SCANER
INKJET
HP640/840 $136/189
HP935/960 $299/359
Canon 2100/S450 $99/189
Epson 480/880 [illegible]
777/880/870 $135/299/389
Lexmark Z12 $89
Z32/Z42/Z52 $99/$149/$199
LASER
HP1100/2100 $559/979
Lexmark E312 $899
Brother 1250dx $479
SCANNER
ACER 3300 $99
Epson 610/1270U $159/$279
Canon N650U $149

MONITOR
Samsung 750s/550P $269/385
753DF/900SL $299/429
700IFT/720DF $395/389
950OP/900NF $479/569
LCD 570s/570v $900/$600
NEC FE700/950+ 17" $319/676
AOC 17" .26 1600x1200 $245
15" .28 1000x1200 $330
SONY E200/E400 $509/719
[illegible]
Viewsonic
E70/PE75 $346/618
E790-3 $699
CF775/PF775 $389/479
PF790 $599
Hansol 710P/900 $319/$439
U/B795FT+/915/B+ 8st $390/599
KDS AV17/190FT $375/699

VIDEO CARD
ATI(AGP)
Xpert98/2000 $49/86
Fury pro 8V invest 32M $139
Radeon 32/64 ddr $180/288
Radeon 32M VE $148/179
Radeon 64Mb VIVO $[illegible]
Radeon All-in-wonder 32 $[illegible]
MATROX
G450 16/32M dual $129/156
ASUS
6800deluxe 32M [illegible]
7100 pure/TV out $149/165
7700 32/38 del $309/309
8200 Geforce III $[illegible]
POWERCOLOR
Riva TnT2 pro 32m +36 $119
Forsa TnT2 M64 32Mb $[illegible]
Forsa Geforce II MX 32M $[illegible]
ACER Geforce2 MX 32 $ [illegible]
MSI Geforce II MX 32M $149
Abit Geforce2 MX 32M 5$169

CD-WRITER
Panasonic 8432 re oem $139
HP8150i 8x4x32 $[illegible]
HP9350i 10x4x32 $[illegible]
YAMAHA
16x10x40 Bareau $[illegible]
PLEXTOR
12x10x32 int.IDE RW $[illegible]
12+10x32 RW SCSI $479
16x10x40 int.IDE RW $[illegible]
Liteon 12x10x32 RW $[illegible]
RICOH 12x 0x32 RW $[illegible]
AOPEN [illegible] CDRW$[illegible]
Creative 12x10x32 RW$[illegible]
LG 12x8x32 CDRW $159

SPEAKER
AC833/45 2/54 $[illegible]
FPS1000/2000 $[illegible]
Theatre 5 1 DTT3500 $379
[illegible]

HARD DRIVE
Maxtor DiamondMax
5400 20/30/40/60 + 30/1[illegible]
7200 20/30G $169/189
40/60G $219/333
Quantum
AS 7200 20/30/40G $159/189/229
IBM 75GXP
7200 20/30/60Gb $185/213/330
Fujitsu 10/20G
$129/139/135
Promise A1A100 raid controller $1[illegible]

NETWORK
D-Link DFE530 10/100 $20
D-Link 5 ports 100 switch $85/128
D-Link phoneline kit $[illegible]
ACER 10m 5/8 hub $38/49
3-COM 3c905 10/100 $[illegible]
Linksys router [illegible] port $138/[illegible]
SMC 4 port &PSVR router $[illegible]
ABC 4 port wireless router $[illegible]

SOUND/CDROM
LG 52X CDROM $48
SB 16/ 20live $[illegible]
SB Live value 5 1 $[illegible]
SB MP3 5 1 digital $139
SB Platinum 5 1 $[illegible]
Aopen 12X DVD wheel $[illegible]
Toshiba 12X DVD $[illegible]
Pioneer 16X DVD $119/$139
Pioneer 40X SCSI CD $148

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Notebook Memory
PC100 144pin64/128/256M
$[illegible]/378
Notebook PCMCIA hard
V 90 56K FaxModem $79
V 90 56K FM+10M NIC $125
10Mb PC card $45
10/100Mb PC card $75

RAM(call for Prices)
PC133 64/128/256 $39/59/118
PC133 CAS2 128/256 $75/128
PC2100 128/256 $128/209

FAX/MODEM
Rockwell PCI V 90 voice $25
USR V90 ext/hardware $49/69
SupraMax PCI v90 voice $48
Acer 56k PCI/ISA $35/69

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Banks launch online bill payment

TORONTO—A group of financial institutions that includes all but one of Canada's five big banks has launched its webdoxs electronic bill payment service across Canada

Webdoxs operated by the banks joint venture e-route Inc. allows customers to receive and pay bills through their banks' electronic banking sites.

The Canadian Imperial Bank of Commerce, Royal Bank of Canada Scotiabank, and TD Canada Trust are backers of e-route, along with the National Bank of Canada and Quebec's Mouvement des caisses Desjardins The only major Canadian bank not involved in the initiative is the Bank of Montreal.

Rod Whitwham, e-route's chief executive officer said the service has been operating since late last year with Videotron the Quebec-based media company as its first customer.

Whitwham said webdoxs has become available as an option on the participating banks online banking Web sites since the beginning of the year and some 175,000 customers have signed up

E-route has also announced that it has signed up Ford Credit Canada Ltd., Chevron Canada, Bell Canada, and Bell Mobility as additional billing customers for the service Several other organizations, including the Visa card operations of the participating banks, and several electrical utilities have also signed.

Whitwham said that participating consumers will see their bills by clicking the webdoxs option on their e banking pages. A customer will be able to pay a bill from the Web site, and if he or she wishes examine an electronic bill that will look just like the printed version

Participating billers will also be able to offer other information and advertising on their own sections of the webdoxs site The site will also offer the option of contacting the biller by email to ask questions.

Consumers will have the option of receiving e-mail notifications when bills arrive in their webdoxs accounts Whitwham added.

After paying a bill through webdoxs, the customer will immediately be able to see an updated bank balance on the e-banking site.

Whitwham said offering the service through the banks' Web sites will help allay consumers concerns about the security risks of paying bills online

"Consumers, as much as they may not love banks in Canada do trust them," he said.

—Newsbytes

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nVidia TNT2 32MB AGP4x
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Nx3 Subwoofer, 12x DVDROM
Fujitsu Keyboard, Wheel Mouse
17" ATX Case

Advanced Performance

P3-866/ 933/ 1GHz
$1489/ 1540/ 1579
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30GB 7200rpm HDD 12x DVDROM
Asus V7100 32MB
LG 8x4x32x CD-Writer
SB Live 5.1, Zenon 6000
Microsoft Internet KB & Mouse
AOpen 56k Modem
In-Win 17" ATX Case

Dream Machine

P4-1.3/ 1.4/ 1.5GHz
$2330/ 2480/ 2799
Intel D810GB MotherBoard
128MB RAM Bus, 1.44 FDD
ATI Radeon All-in-wonder DDR 32MB
40GB 7200rpm HDD, 16x DVDROM
Yamaha 16x10x40 8MB buffers
Creative SB Live Xgamer 5.1
D-Link 10/100Mbps, 56K v.90 Modem
Logitech Cordless KB & Mouse
Creative DTT 2200
17" ATX Case

With Systems purchase: Win ME $135 Windows 2000 $199 MS Office 2000 Small business/ professional $289/499 MS Natural Keyboard & Mouse $49 MS Internet Keyboard & Mouse $59

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Duron 750 $560
T-bird 800/ 900 $659/689
T-bird 1.0/ 1.1G $730/769

AMD Gigabyte

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ATI Xpert 2000 32MB
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SB Ensoniq PCI
180W Speakers, 52x CD-ROM
AOpen 56k v.90 Modem
Win 98 Keyboard, Mouse
17" ATX Case

Duron 750 $699
T-bird 800/ 900 $789/829
T-bird 1.0/ 1.1G $809/889

AMD MSI

Asus A7V Motherboard
128MB PC133, 1.44 Floppy Drive
TNT2 32MB AGP 4x
30GB 7200rpm HDD,
Sound Blaster Live Value
56k v.90 Modem, Subwoofer
Fujitsu keyboard, Wheel mouse
Toshiba 12X DVD-ROM
ATX 17" Case

Duron 800 $968
T-bird 900/ 950 $1039/1089
T-bird 1.0/ 1.1G $1099/1119

AMD ABIT

Abit KT7A-RAID MotherBoard
256MB PC133 1.44 Floppy Drive
Asus V7100 32MB
30GB 7200rpm HDD
AOpen 56k Modem, 12x DVDROM
LG 8x4x32x CD Writer
SB Live 5.1 Altec ACS45.2W
Microsoft Internet KB & Mouse
17" ATX 300W Case

T-bird 950 $1499
T-bird 1.0G $1509
T-bird 1.1/ 1.2G $1520/1589

AMD ASUS

Asus A7A266 Motherboard
128MB DDR 266MHz, 1.44 FDD
ATI Radeon All-in-wonder DDR 32MB
40GB 7200rpm HDD 16x DVDROM
Yamaha 16x10x40 8MB Buffers
Creative SB Live X Gamer 5.1
D-Link 10/100Mbps, 56K v.90 Modem
Creative DTT 2200
Logitech Cordless KB & Mouse
17" ATX Case

T-bird 1.0/ 1.1GHz $2108/2139
T-bird 1.2GHz $2199
T-bird 1.3GHz $2210

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PIII 866/ 933
$505/ 565
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64MB PC133 MEMORY
17" ATX 300w CASE

AMD Duron 850/ 900
$329/ 380
T-BIRD 900/ 1.0GHz
$429/ 455
ECS ALL IN ONE Motherboard
64MB PC133 Memory
17" ATX 300w Case

Free Installation

NOTEBOOK

Toshiba 4340 14.1"TFT P3-650/ 64M/ 12G/ 6x DVD/ 56K/ Win 98	$2560
Toshiba 2800 DVD 14.1"TFT P3-650/ 128M/ 10G/ 8x DVD/ Win ME	$2810
Toshiba 2800 DVD 14.1"TFT Cel-650/ 64M/ 6G/ 8X DVD/ 56k/ Win ME	$2249
Toshiba 4360 DVD 14.1TFT P3-700/ 64M/ 10G/ 6X DVD/ 56K/ Win 98	$2948
Fujitsu E6556 14.1TFT P3-650/ 64M/ 15G/ DVD/ 56k	$3229
Fujitsu A4170 12.1TFT Cel-500/ 64M/ 6G/ 24x/ 56k/ Win 98	$3029
Acer 200DX 12.1 HPA Cel-550/ 32M/ 6G/ 24x/ 56k	$1489
NEC 4E7AA 14.1" TFT P3-650/ 64M/ 6G/ 24x/ 56k/ Win 98	$2800

Motherboards

Abit KT7 / KT7 Raid	$201/231
Abit VL6 / VH6	$135/145
AOpen AX34/ MX34 /MX3S8IOE	$121/138/176
AOpen MK33 / AK33	$143/158
Asus A7A266 / A7V-E	$260/300
Asus A7V / A7V Pro	$219/309
Asus CBU-DLS-U3 ATX	$1,040
Asus CUSL2-C / CUSL2	$189/223
Asus CUV4X-C / CUV4X-E	$146/171
Asus CUV4X D / DLS / P4T	$241/510/318
ECS K7S5Z-M / P6STP-FL All-in-one	$120/110
ECS K7VZA / P6ISA-II	$119/139
Gigabyte 7DX-C / 7DX	$256/266
Gigabyte GA60XE-1 / GA60XE	$151/170
Gigabyte GA-6VXC7-4X / 4XP	$115/138
Gigabyte K7ZM / K7ZX	$136/166
Intel D815EEAA / D815EEAAL	$215/225
Intel D815EPEA S370	[illegible]
Intel D850GB / D850GBAL	$315/355
MSI K7T-Turbo / K7T-Raid	$184/204
MSI K7T-Pro 2A / 850 Pro	$108/310

Hard Drive

Fujitsu 10 / 20GB (5400rpm)	$120/130
Fujitsu 30 / 40GB (5400rpm)	$159/189
Maxtor 10/ 30/ 40GB (5400rpm)	$118/157/179
Maxtor 60 / 40GB (5400rpm)	$208/303
Maxtor 15/ 20/ 30GB (7200rpm)	$142/162/185
Maxtor 40 / 60GB (7200rpm)	$223/320
Quantum 20 / 30GB (7200rpm)	$150/186
Quantum 40 / 40GB (7200rpm)	$220/310
WD 20 / 30 / 40GB (5400rpm)	$154/170/195
WD 20 / 30 / 40GB (7200rpm)	$161/190/225

Video Card

ATI Xpert 98 8M / Xpert 2000 32M	$49/83
ATI All-in-Wonder 128 Pro 16 / 32M	$193/243
ATI Radeon DDR 32 / 64M	$190/270
ATI Radeon All-in-Wonder DDR 32M	$350
ATI Xpert 2000 Pro 16 / 32M	$80/99
ATI Rage Fury Pro Video In / Out 32M	$143
Forsa nVidia TNT2 / GeForce 256 32M	$69/80
Forsa GeForce 2 MX 32M	$115
Elsa GeForce 2 MX 32M / TV out	$116/128
Elsa TNT2 / GeForce 2 MX 32M	$80/100
Matrox G450 Millenium DDR 16/ 32M	$138/163
Asus V7100 GeForce2 MX 32M/TV Out	$146/168
Asus V7700 GeForce 2 32M/ Deluxe	$265/306
Asus V7700 Geforce 2 64M/ Deluxe	$421/[illegible]
PowerColor TNT2 M64 16 / 32M	$69/79
PowerColor TNT2 32M TV Out	[illegible]

Monitor

AOC 15"/ 17" 27/ 19" .26dpi	$180/220/350
AOC 17" .25 / 15" TFT LCD	$249/819
AOpen 15" F50L Flat / 17" A795	$185/225
LG 17" 775FT / 795FT	$345/397
NEC 17" AS70 / FE700	$283/358
NEC 17" FE750 / 15" FE950	$390/570
Optiquest 17" Q71 .27 / 19" Q95	$293/456
Samsung 15" 570V/ F770 TFT LCD	$749/1000
Samsung 17" 750S/ 700NF	$340/435
Samsung 17" 753DF/ 755DF	$347/315
Samsung 19" 955DF/ 900NF Flat	$466/582
Samsung 19" 950P	$395
Sceptre 15" LCD	$809
Sony 17" E200 / G200	$499/569
Sony 19" E400 / G400	$685/763
Sony 21" E500 / G500	$1590/1040
Viewsonic 15" VG150/ VP151 LCD	$800/1096
Viewsonic 17" E70/E70F/PF775	$280/316/499
Viewsonic 19" E90 / FE700	$499/899
Viewsonic 21" G815	$1190

CD-Writer

AOpen 12x10x32x CD-RW	$180
HP 10x4x32x / 12x8x32x CD-RW	$289/381
LG 8x4x32x / 12x8x32x CD-RW	$170/172
NEC 8x4x32x CD-RW	$180
Panasonic 8x4x32x CD-RW	$156
Plextor 12x10x32 /16x10x32 CD-RW	$[illegible]/380
Ricoh 12x10x32x CD-RW	$195
Sony 12x8x32x w/ Software	$289
Teac 12x10x32/16x10x32 w/BurnProof	$231/315
Yamaha 16x10x40x CD-RW	$289

CD-ROM & DVD

Artec 50x/ AOpen 40x / 52x	$47/44/55
Asus 50x / Panasonic 50x	$63/53
Creative 50x / 52x / LG 52x	$50/53/49
AOpen / Toshiba 12x DVD	$89/99
Pioneer / Toshiba 16x DVD	$140/133

Network Card

Amend 10/100 PCI	$15
3Com 3C905-TX 10/100	$85
3Com 3C980-TX 10/100 Server Card	$166
AOpen 10/100	$30
D-link DE 528CT / 10/100Mbps	$18/23
PCMCIA 10/100 NIC	$69
Intel 8460 10/100 Wakeup	$63
4 / 8 / 12 / 16 Ports Hub	$35/45/79/99
Intel 5 / 8 Ports Hub	$72/96
RJ45 Cable	$.20/ft

Keyboard/Mouse/Case

Logitech Cordless KB & Mouse	$89
Logitech internet PS/2 / Wheel Mouse	$33/12
HP Wheel Mouse	$12
MS Internet KB / Mouse	$39
Fujitsu 8725 / 4725 KB	$19/39
2 Button / Scroll Mouse	$6/8
Win 98 KB / MS Optical Mouse	$10/58

Modems

3com USR Win 56k / w/Voice	$46/53
3com USR 56k V.90 / w/Voice	$78/94
3com USR 56k / 14.4 V.90 External	$131
Acer 56k PCI / ISA	$29/64
AOpen FM56-SM / FM 56k	$28/43
PCTEL 56k V90	$21
56k V.90 External USB	$89

Printer & Scanner

Canon 1000 / 2100 / 5100	$79/98/180
Canon BJC 50 / 55 / 85	$400/460/370
Epson Stylus Color 580 / 777	$99/148
Lexmark Z13/ Z32/ Z42/ Z52	$70/108/148/232
Brother 1050/ 1240DX/ 1250DX	$320/448/530
HP Laser Jet 1100 / 2100	$540/963
Samsung Laser ML-4500	$363
Canon N340P/ N640P/ FB630UX	$80/110/145
AcerScan 3300U/ 4300U/ 1240UT	$94/106/193
Mustek 600 / 1200LP	$70/99
Mustek 1200 CUB / 1200 USB	$100/109
Umax 600x1200dpi USB	$80

Sound & Speakers

Audio Excel PCI 3D	$18
Creative Ensoniq PCI	$29
Creative SoundBlaster PCI 128	$40
Creative SB Live Value / Live 5.1	$67/89
Creative SB Live XGamer / MP3 5.1	$109/139
Creative SB Live Platinum 5.1	$263
Creative 5.1 DTT 2200/ 2500/ 3500	$160/300/563
Creative FPS 1500 / 1000 / SW310	$99/128/44
Zenon 100W / N103 Subwoofer	$19/25
Zenon ZN-6000	$68
Altec ACS 33 / 48 / 54	$59/143/185

ZIP/JAZ/LS120/Disk

ZIP 100MB IDE/Para/USB/Disc	$89/140/175/15
Jazz 2G SCSI Int/Ext/Disc	$439/453/129
LS120 FDD Int/Ext/Disc	$100/225/13

Camcordar

Canon PowerShot A50 / S10 Digital	$499/750
Intel PC Camera / Pro	$117/173
Logitech QuickCam Express/ HomeUSB	$58/125
Logitech QuickCam VC USB Camera	$99

Accessories & Case

3.5 Universal Installation Kit	$5
Alpha for AMD Socket-A	$66
ATX Power Supply 250W / 300W	$35/45
Blank CD 10 Disk Pack	$9
Case 15"/ 17"/ 19"/ 24"/ Fan	$35/39/43/65/6
CoolMaster DPS-5M1 / 6H11	$12/18
Floppy Cable / FPGA Fan	$3/8
Golden ORB for AMD Socket-A/ Athlon Slot-A	$28/35
Golden ORB for FPGA & 370 / intel SECC II	$19/31
Golden ORB for VGA Card (Blue ORB)	$21
IDE Cable / Mobile Rack	$4/17
Panasonic Floppy Drv/ PCI to USB Controller	$17/38
Printer Cable / USB Adapter / Cable	$3/15/8
SmartMedia Flash Card 16MB	$49
Volcano II / Super ORB for AMD Socket-A	$26/37
Windows 98 SE / ME / 2000 Pro	$145/145/290
Adaptec EZ CD Creator	$65

CPU & RAM

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Will that be digital or analogue?

The race is heating up in the emerging digital copier market. Meanwhile, although advances in analogue technology are few and far between, demand remains strong. Just look at the healthy rebuilt market.

By Risha Gotlieb

The push is on by the big photocopier manufacturers towards digital. But, although digital technology has made inroads into the photocopying industry, the major manufacturers in this sector have found convincing customers to switch to digital is an uphill battle.

When it introduced some of the first digital copiers more a decade ago, Canon didn't find a very receptive market, but the situation has started to change.

Considering that many have stopped developing or even producing analogue copiers (within the next few years, it's expected new analogue machines will no longer be available), their intentions seem clear.

"We are going to continue to produce the high-end analogue machines, but we have stopped their further development," says Jerry Low Foon, solutions program manager for Xerox Canada (http://www.xerox.com).

Why digital?

Generally speaking, the new breed of digital copiers boasts an integration of capabilities that include copying, faxing, printing, and scanning.

The new models are more like very sophisticated multi-function devices—the all-in-one peripherals usually targeted at the small and home office market.

Digital photocopiers need to be connected to a computer to exploit their advanced functions. These include the ability to manipulate images between the original copying and the final printing. In comparison, conventional copiers have few manipulation capabilities. They are usually restricted to size and lightness/darkness adjustments.

The new digital copiers offer more flexibility because the images are saved in a digital format once scanned, which means they can then be manipulated with software. The digital format also allows users to insert graphics, delete text, change fonts, or even encrypt text.

Manufacturers of digital copiers say the new machines can be very economical to run when connected to an office network.

"The analogue copier is basically an island, whereas digital can be integrated into your company's network, and from the comfort of your desktop you can control the entire document creation, including producing five sets of documents, stapled and sorted," says Adrian Wilkinson, manager of systems sales support for Canon Canada's Imaging Systems Group (http://www.canon.ca).

Cofax founder Karim Rawji, stands amongst the office equipment his company reconditions then resells or leases.

The cost equation

Although this concept sounds good, the pricing of digital copiers does not follow the traditional rules of economics. Simply put, it is cheaper, often by thousands of dollars, to purchase the comparable components (scanner, printer, and fax machine) than it is to buy a digital copier.

Another factor that may impede the acceptance of digital machines is that most new companies don't start with 50 employees, but rather two or three, which makes the cost of this technology impractical.

On the other hand, it's a perfect solution for a company that is, for example, considering opening a sales office in a new location—a digital machine would accommodate many of their hardware needs in one package.

Good as new

Analogue is still the dominant copier of choice and, because some manufacturers have stopped the production of certain models, the business of reconditioning analogue units is experiencing considerable growth.

A recognized leader in this segment is Cofax Business Systems (http://www.cofax.net). Since it started some 10 years ago, the Markham-based company which reconditions photocopiers and fax machines, is enjoying phenomenal growth.

When Cofax first opened its doors, it catered primarily to small businesses, from local manufacturers to law firms. Today, the company finds itself being sought out by *Fortune* 500 companies, not just small enterprises, to meet their photocopying needs.

"Our business has truly changed," says Karim Rawji, who founded Cofax. "At one time we used to spend 80 percent of our time trying to sell our products and 20 percent sourcing them. Today, the demand is so great that we find ourselves devoting 80 percent of our time and energy sourcing quality machines to recondition, and only 20 percent selling them."

Rawji says that with the growth of the reconditioned copier industry, more and more companies are realizing there are options to expensive new equipment leases.

Indeed, one of the reasons this industry has grown is the marketing strategy of many of the manufacturers. High end copiers are big ticket items that tend to be leased rather than purchased, and once a lease expires, the manufacturer finds it more profitable to move their customers to a new machine with another three year lease, leaving many perfectly good copiers with only three years of usage looking for new homes.

Customer Barbara Rayfield, of GTECH Canada Computer Systems, says she's very pleased with the reconditioned fax machine and photocopier she acquired from Cofax.

Rayfield, who used to lease equipment directly from a manufacturer, says that with the two reconditioned units she's purchased from Cofax, she will easily save $20 000 over a four year period.

These are the kind of savings you can expect from a reconditioned machine. The basic model of the popular Canon 6230 which has a copying speed of 30 pages per minute sells new for about $12,000.

Cofax sells a reconditioned Canon 6230 which may be just six months old, for $4,000. Another comparison can be made at the leasing level. the lease for this model new is $235 a month, while Cofax will lease it for about $60 a month.

Rawji says that, although he offers his customers a choice between reconditioned digital copiers and reconditioned analogue copiers, they typically choose the analogue because they more than meet their needs.

"In terms of the mechanics, digital and analogue are basically the same," says Rawji. "The only difference is that an analogue cannot be connected to a computer but it can do everything else that a digital does."

Elvira Mantei, office manager for a Mississauga, Ont.-based Hyundai dealership, says when it came time to replacing their two photocopiers, it didn't make sense to purchase digital machines. "We couldn't justify the cost, nor did we need the sophisticated capabilities of these machines."

She says the two reconditioned analogue photocopiers she recently purchased were cheaper than comparable digital copiers.

Rawji says today's entrepreneurs—especially small to mid-sized operations that need to reduce operating costs—understand the value of reconditioned equipment, whether it's digital or analogue.

Cofax completely overhauls the equipment they source and resell. The company also backs the reconditioned units with a warranty similar to those offered by the original manufacturer on the new equipment.

If your business revolves around reproducing high-quality photos and/or artwork, then a digital copier new or used, is the answer. But if you're running a traditional office, most analogue copiers will more than suffice for your copying needs—with considerable cost savings. ❑

Call-Net's Ascenda an ASP for Canadian small business

By Tom Venetis

Ascenda Inc. (http://www.ascenda.com) is one of the newest players in the Canadian application service provider (ASP) market, offering a set of hosted business and communications applications to small and mid-sized businesses. A sister company to Sprint Canada and a wholly-owned subsidiary of Call-Net Enterprises, ascenda says it will offer its services first in the Toronto area, after which it plans expand across Canada by the end of the year then into the northeastern U.S.

"Our target market is for applications that we call e-applications or back-office applications for businesses that have between 50 to 500 employees," says Maggs Barrett, president and chief executive officer of ascenda Inc. in Toronto. "For our e-presence or e-commerce applications, we are looking at companies with between 50 to 1,000 employees."

Currently, ascenda hosts applications from Microsoft (http://www.microsoft.ca), Impressa Inc. (http://www.impressa.com), and Great Plains (http://www.greatplains.com). Ascenda's Microsoft offerings will include Office 2000 business productivity applications and Microsoft Exchange Server 2000 messaging and communications services.

Its Great Plains applications will include Great Plains Dynamics eEnterprise, Great Plains Human Resources Series eSell, and Great Plains Siebel Front Office. Impressa will provide ascenda customers with BizGear e-commerce Web site development software for small to mid-size operations.

To access the hosted online applications, customers sign a three-year contract and pay a monthly fee (determined by the mix of services required) says Barrett.

"The license fee, hosting fee, and network fee is monthly over that period of time," Barrett adds. "There will be a set up fee to get things up and running. And if a customer has an existing email system then we have a set of additional services that will help them move their existing data over to the new online environment."

According to Framingham Mass.-based International Data Corp., the ASP market is expected to grow from US$150 million in 1999 to US$2 billion by 2003.

Barrett predicts that, for Canada, the ASP market will grow from $50 million in 2000 to some $455 million by 2004.

It is expected that more small and mid-size businesses will be lured to ASPs because of the promised enhancements to their operations without the hassle and high cost of back-end integration and maintenance.

"Basically, we are providing a series of applications that are pre-integrated so the businesses don't have to buy them all at once or struggle to maintain them," Barrett says.

"It has an upgrade and growth plan built in. If you look at someone who has a Web site today a lot of it is brochureware and now they are trying to get more usage out of the site. What they need to do is connect the site to the back office so they have the ability to take credit card orders, issue a PO [purchase order] check inventory and have in place the necessary fulfillment process. What we are offering is a way of beginning with the first part of the value chain and then offering packages that move them further as the business grows." ❑

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Canada's online gender gap slims, but economic divide remains

OTTAWA—Statistics Canada (Statscan) reported in late March that the Internet-access "gender gap" has all but disappeared, but that serious barriers exist for lower income families and those with less education.

A Statscan report (http://www.statcan.ca/) calculated that some 13 million Canadians over the age of 15 had used the Internet in the 12 months prior to a survey it conducted in 2000. That number, it said, represents 53 percent of all Canadians over 15.

The telephone survey, based on the responses of more than 25,000 people, found that 50 percent of women in Canada are now using the Internet, up dramatically from a count of just 14 percent in 1994.

Men now are only slightly more likely to have used the Net, Statscan said, noting the Internet access was reported by 56 percent of men in 2000, up from 22 percent in 1994. Men are also more likely to spend more time online.

However, Statscan said the real divide between those who have used the Internet and those who haven't is most likely to be marked by age, education, or money.

"People who use the Internet tend to be younger, and to have higher incomes and more education than those who don't," Statscan wrote in a report on its findings, part of its annual *General Social Survey*.

"Individuals with university education were much more likely to use the Internet than those with less than a high school diploma," Statscan wrote. "Among individuals 20 or older, 13 percent of those with less than a high school diploma used the Internet, compared with 79 percent with university education."

The agency said that just 30 percent of individuals in households with incomes less than $20,000 a year had used the Internet, compared with 81 percent of those in households with annual incomes of $80,000 or more.

The impact of income on Internet access is even more dramatic when teens—who frequently have Internet access at school—are removed from the picture.

For persons aged 55 to 64, for example, only eight percent of those with household incomes of less than $20,000 had used the Internet, compared to 77 percent of those with incomes of more than $100,000 a year.

Statscan said that the poor and less educated are not simply uninterested in the Net. Of those who had not yet connected, just seven percent said they had no need to be online, while another seven percent cited other reasons, such as health problems, concerns about content, or a belief that they were too old.

The top reason unconnected Canadians gave for not using the Internet—cited by 28 percent—was the cost of Internet access. Close behind, at 27 percent, was lack of access to a computer or Internet connectivity.

Eighteen percent of those who did not use the Internet said they didn't have enough time, and 13 percent said they felt they didn't have the training or skills to be online.

Statscan said that email was the most popular online activity—something 84 percent of connected Canadians use.

Searching for goods and services was the next most popular activity (reported by 75 percent), particularly for adults, although actually making purchases online was something just 25 percent said they had done.

Statscan said men were more likely than women to use the Internet to obtain news, while women were more likely than men to research medical information online.

Teens were the least likely to surf for news.

In addition, according to Statscan, "As Canadians spend more time on the Internet they devote less time to other activities. More than one-quarter of users reported that because of their Internet use, they watched less television," the agency said.

"Fifteen percent spent less time reading books, magazines, and newspapers. About 10 percent reported that they devoted less time to sleeping, leisure activities and household chores," the report read.

—*Newsbytes*

HP launches Internet-ready printers

By Tom Venetis

Hewlett-Packard believes that printers are the next major devices to be taken up by the intersection between the Internet and consumer products. Janet Le Mare, marketing manager for HP imaging and printing systems with Hewlett-Packard (Canada) Ltd., says "These devices will deliver printing to the next level."

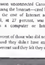
To that end, HP has added more Internet capabilities to its newest set of laser printers which it unveiled recently in Toronto. The devices include the LaserJet 4100 for workgroups, the LaserJet 3200 and 3200m (m stands for Mac) for small and home offices, the LaserJet 220 for small businesses, and the LaserJet 1200 and 1220 for personal business users.

The new models include Internet and wireless features, from embedded Web servers and embedded virtual machines, to scan-to-Web functionality and infrared wireless printing.

Jean-Paul Desmarais, category business manager in HP's imaging and printing organization, says the embedded virtual machine, a key component of the LaserJet 4100, allows the printer to use Java-based applications to communicate with the user, and says he expects developers will create other Java-based applications that would enable the printer to mesh more easily with wireless devices.

The HP LaserJet 3200 and 3200m offer a colour scan-to-Web feature that allows users to scan a photo or document into the printer, which can be converted into a Web format and posted online immediately.

With the HP LaserJet 1200 and 1220, users can scan and send color documents by email, or convert documents to a variety of digital formats for storage. ❑



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Canada Comdex West 2001

Wireless, USB 2.0, Office XP highlights of Vancouver show

By Jeff Evans

Comdex Canada West 2001, which ran March 13-15 at Vancouver's Trade and Convention Centre, attracted tens of thousands of computer industry professionals and computer end users to a display of the latest in computer hardware, software, and networking services.

Formerly known as the Pac Rim show, Comdex Canada West has seen changes in its name, ownership and the mix of exhibitors over the past five years, a reflection of the huge changes sweeping the technology field.

As has been the case in recent years, the big PC companies such as IBM, Compaq, Dell, NEC, Toshiba, Sony and Apple declined to make a direct presence at this Comdex, leaving the field to companies that offer the software, peripherals and services to make computing solutions work.

So, among the stars of the show were Microsoft, showing its offerings for the .NET age, including Office XP and Windows XP, Palm, with its line of handheld computers, and Internet service providers Telus, WorldCom (formerly UUNET) and Bell.

The keynote speeches reflected the Internet-centric approach of the show.

Darren Entwistle, president of Western telco giant Telus Corp., opened the show on March 13 to a standing room only audience, explaining his vision of the connected Canada that is taking shape in the new millennium.

Claudio Silvestri, director of small business for Microsoft Canada, also drew a strong crowd the next day with a speech in which he promised Microsoft will deliver the office and Internet technologies Canadian small businesses—the country's major engine for job creation—need to succeed.

Finally, on March 15, Michael Moskowitz, president and general manager of Palm Canada, explained how pervasive mobile computing is being integrated into Internet based business.

After Michael Moskowitz's keynote presentation, CanadaComputes.com (The Computer Paper's online sister publication) hosted the Towne Hall Power Panel, a forum on wireless and broadband Internet. Panelists included representatives from IBM, WorldCom, and 3Com as well as Graeme Bennett, an alumnus of *The Computer Paper* who created the precursor to CanadaComputes.com, the fondly remembered tcp.ca.

A record crowd turned out for this year's Towne Hall, peppering the experts with questions on privacy and security of wireless data, the possible health risks of too much broadcast energy (the experts concluded that the risks appear minimal, but still deserve further study), the availability of wireless Internet service outside major urban centres (not without the infrastructure, they said), and much else.

One of the major areas of concern for both the panelists and the Towne Hall attendees was the jumble of incompatible wireless technologies that still exist around the world and even within Canada.

The panelists agreed that until the standards debate is settled, probably in the next two to four years, the usefulness of wireless networking will be inhibited.

On the trade show floor, one of the most exciting new product lines was the first wave of USB 2.0 interfaces and peripherals that we have seen.

USB 2.0, the successor to the original 12 Mbps USB 1.1, offers 40 times the data transfer speed of the earlier standard. Although the USB 2.0 standard was announced in August 1999 at the Intel Developer Forum in Palm Springs, products using the standard have been slow in coming.

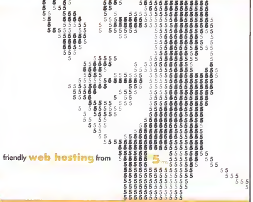
That USB 2.0 drought may be about to end abruptly, according to Anaheim, Calif.-based Orange Micro Inc. Orange Micro showed a range of USB 2.0 products, including a four-port USB 2.0 PC card for notebook computers, a combo FireWire/USB 2.0 connector card for desktop PCs, an external USB 2.0 hub, and internal four port USB 2.0 card.

Orange Micro was hosted at Comdex by Canadian technology distributor EMJ. According to an Orange Micro representative, the new USB 2.0 cards will begin shipping in late April or early May. The first of "hundreds" of third-party developers will begin unveiling USB peripherals such as digital still cameras, external hard drives, Webcams, scanners, and other devices towards the middle of 2001.

Orange Micro also produces FireWire and fast SCSI interface cards, but according to Orange Micro chief executive officer, Art Scotten, "USB 2.0 Hi-Speed represents a technological quantum leap forward.

Users will be able to invest in our new Hi-Speed interface cards, connect to all their current USB [1.1] devices, and be ready for the ultra-fast USB 2.0 products when they hit the market."

—CanadaComputes.com



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New fibre-optic network for Alberta

Residents between Edmonton and Grande Prairie, Alta., may soon have a greater choice of high-speed Internet service providers (ISPs) thanks to an enterprising network builder. In late March, Total Telcom Inc. said its Optronic network is "open for broadband business." Total built this fibre-optic snake with its subsidiary Total Telcom Fiber Inc.

Until now "the only real option (for broadband service) was through Telus," said Craig Baker, Total's executive vice-president, during a telephone interview. "But... in remote areas it hasn't been really good service."

Like many telecommunications firms offering high-speed service, Telus had a problem with "reach," Craig said.

Broadband via phone lines (ADSL) are only as good as a customer's distance to the central office. If the customer is more than 5 km away from the central office, the Internet connection speed is seriously hindered.

Craig said Total has done away with this trouble. The company installed OC-12 electronics (from Lucent Technologies Inc.) capable of cranking zippy service to 336 T1 lines—more than enough for Total's prospective clients.

"The capacity of these fibres are scalable and can be increased substantially as customer demand dictates," reads a Total press release.

ISPs, cable companies and other data carriers count as Total's customer base. Once the network creator completes its deals with these people (Craig said Total is in negotiations) the inhabitants of Grande Prairie could have a wider choice of high speed providers.

This might be good news for the city. It's going "cyber" these days with an initiative to bring "universal interactive access to data and information" within its walls, according to the municipality's Web site.

Total says this network could bring in as much as $500 000-per month, so long as everything goes according to plan. Craig said the company's looking for carriers to bring the fibre to residents' homes.

—*CanadaComputes.com*

Journalists let words run free

NB—Forget censorship, political sensitivity or legal restrictions, a recent addition to the Web has invited some of the world's most respected professional writers to tell us what they really think. The interestingly titled Mighty Organ is an eclectic collection of journalistic observations, interests and private passions from people who normally get paid for what they write. From "Watching Paint Dry" to "The Gnome Liberation Front," the articles present a blissfully cynical view of modern life from those with a privileged perspective.

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Processor wars: AMD pushes high, low

TCP Lab takes AMD's new Athlon and Duron processors for a spin

By Sean Carruthers

Although Advanced Micro Devices (AMD) has been riding a wave of acclaim for its recent Athlon processors, that hasn't stopped it from releasing new versions of the Athlon, with two new models announced at CeBIT in Hannover, Germany on March 22.

The new Athlons are available in 1.3 and 1.33 GHz versions, and use the same Thunderbird core technology as the previously released 1.2 GHz model. The 1.3 GHz processor uses a 200 MHz bus, and the 1.33 GHz uses the faster 266 MHz bus for increased performance.

On April 2, AMD also announced a faster processor in its value-oriented Duron line. The new processor comes in at 900 MHz, a small step up from the previous high water mark of 850 MHz. The 900 MHz version uses the same core as the 850 MHz version.

We recently had a chance to put some of these processors through their paces in the Test Lab.

All platforms used 256 MB of memory (the Athlons used PC2100 DDR SDRAM and the Pentium 4 used PC800 RDRAM, both top-of the-line), a 40 GB ATA100 hard drive, and a 64 MB GeForce2 Ultra graphics card, with the screen resolution set to 1,024x768, in 32-bit colour.

The Athlons used a Gigabyte GA-7DX motherboard, and the Pentium 4 used an Intel 750 motherboard. Both were set up with identical "typical" installations of Windows 98 Second Edition.

Athletic Athlon sprints further ahead

	Athlon 1.2 GHz	Athlon 1.33 GHz	Pentium 4 1.5 GHz
SYSmark overall			
Internet content creation	220	235	201
Office productivity	227	242	181
SYSmark 2000	224	239	189
Individual tests			
Bryce 4	264	293	224
CorelDraw 9	293	330	234
Elastic Reality 3.1	284	313	229
Excel 2000	248	275	196
Naturally Speaking 4.0	194	205	214
Netscape Communicator	214	221	163
Paradox 9.0	206	220	171
Photoshop 5.5	136	140	153
PowerPoint 2000	266	282	204
Premiere 5.1	236	254	137
Word 2000	195	200	124
Windows Media Encoder	221	242	316

There are no real surprises when you look at the numbers for the two Athlon chips: the 1.33 GHz processor is faster than the 1.2 GHz model by between six and seven percent throughout the tests, which is slightly less than the 11 percent increase in the processor speed (you never get a one to-one ratio).

The Athlon processor continues to be strongest with CorelDraw, Bryce, and Elastic Reality (take note, design and 3D people!), and the weak spot is still Photoshop.

One thing we noted in the benchmark runs for the Athlon processors were some fairly wide variations for the numbers returned on each of the benchmarking cycles.

When we run SYSmark, we cycle through the test suite three times, and SYSmark averages the results automatically. This is to ensure that a one-off spike or dip in one of the test suites doesn't skew the results too heavily one way or the other.

Generally there should only be a slight variation in scores from one run to the next, maybe by one or two points.

In some cases, the Athlons showed a 15-point spread between high and low results for the suite (notably on CorelDraw, Elastic Reality and Premiere). With a benchmarking score of 300, a 15-point difference means only a five percent variation, which is probably not enough to notice when you're in the thick of things, but it is a result worth noting nonetheless.

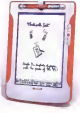
While the Athlon provides speedy performance, it's perhaps not as rock-solid from run to run as should be expected.

Previously, when we compared the 1.2 GHz Athlon to the 1.5 GHz Pentium 4, we noted much the same as we do with the new 1.33 GHz Athlon. Overall, the Pentium 4's

Continued on page 75

Microsoft lines up builders for XP-powered Tablet PCs

ANAHEIM, Calif.—Microsoft Corp. has announced that it now has a dozen manufacturers committed to build its version of a tablet shaped PC.



Microsoft's Tablet PC prototype

During a keynote address at the recent Windows Hardware and Engineering Conference (WinHEC) in Anaheim, Calif., Microsoft chairman Bill Gates said the computers, dubbed the Tablet PC, "will be an even more important advance for PCs than notebook computers were."

Gates said the Tablet PC, a prototype of

Continued on page 76

Processor wars

Continued from page 74

performance is weaker than either Athlon, with a few exceptions. Naturally Speaking voice-recognition software takes a slight edge on the Pentium 4, as does Photoshop 5.5. The Pentium 4 takes a fairly wide lead with Windows Media Encoder—even with the Athlon's speed increase, the Pentium 4 does 30 percent better.

Again, it's worth noting that SYSmark 2000 uses test suites that are not optimized to take advantage of the Pentium 4's SSE2 multimedia extensions.

In one sense, this is slightly unfair to the Pentium 4, because optimized software could clearly run better on it. On the other hand, it's completely fair: most users will be using older software that doesn't contain optimization, and thus the benchmarking suite actually will be more reflective of their systems as they stand right now.

At the value end of things

We also benchmarked the Duron processors against each other using the same system we used for the Athlon processors, but with PC1600 DDR SDRAM instead.

This setup was strictly to provide a better comparison to the benchmarking numbers of the Athlon processors—the Duron/DDR team up is unlikely in the wild, because Duron customers will probably be more inclined to go with a more modest setup.

Again, because the two Durons use the same core technology you see a general increase in performance across the board when you move from the 850 MHz chip to the 900 MHz—between two and three percent.

The Duron is a budget alternative and is designed to offer more modest performance than the Athlon. In general, that's the case, with the Duron 900 MHz performing at about 75 percent of the speed of the Athlon 1.2 GHz.

Keep in mind that the bus speed has dropped from 266 MHz to 200 MHz, and the speed of the chip itself is down 25 percent. Most of the Duron's numbers danced right around the 75 percent mark when compared to the 1.2 GHz Athlon, with a low of 70 percent (in Excel) and a high of 86 percent (for Photoshop).

More interesting is a look at the Duron numbers compared to the 1.5 GHz Pentium 4 system. While the Pentium 4 had the advantage in most of the suites, the Duron actually surged ahead of the Pentium 4 in two benchmarking suites (Premiere, Word).

Duron also came very close in many others (most notably Netscape, which was virtually a photo-finish). Interesting stuff indeed.

	Duron 850 MHz	Duron 900 MHz
SYSmark overall		
Internet content creation	166	174
Office productivity	167	172
SYSmark 2000	167	173
Individual tests		
Bryce 4	185	205
CorelDraw 9	205	222
Elastic Reality 3.1	202	218
Excel 2000	165	174
Naturally Speaking Pref 4.0	150	154
Netscape Communicator	157	162
Paradox 9.0	160	167
Photoshop 5.5	112	117
PowerPoint 2000	190	191
Premiere 5.1	178	185
Word 2000	159	164
Windows Media Encoder	173	182

Pricing notes

For those keeping track, the 1.33 GHz Athlon is still priced lower than the Pentium 4 processors available at the time of writing.

The Athlon is already showing up for under US$300, while the 1.5 GHz Pentium 4 is still more than US$500, and the slower 1.4 GHz model closer to US$350 (we saw it at retail here in Canada for around $900, but of course, all pricing is subject to change).

The Duron should show up at about half the price of the new Athlons, if not cheaper, which is interesting for one key reason. In many ways, the 900 MHz Duron gives the 1.5 GHz Pentium 4 a run for its money, outperforming it in a few test suites, and coming within shouting distance in a few others.

One could argue that our Duron benchmarking numbers were generated with a motherboard and memory configuration that won't likely be teamed up by PC manufacturers, but that's hardly the point.

If you're a system builder you can achieve very similar performance to a high-end Pentium 4 system using AMD's budget processor. Food for thought. Hopefully the release of the 1.7 GHz Pentium 4 processor will bring the pricing on the 1.4 and 1.5 GHz models into more realistic territory.

Stay tuned. ❑

Echoing Japan's higher minds

NB—If you are interested in Japanese current affairs and want to have your say, you may wish to pay a visit to the Japan Echo site. The bimonthly e-journal features translations of essays, interviews, and discussions by noted commentators on topics of interest in Japan today. And as well as housing archives of current and past issues, this site offers an open forum for active online exchange on these topics.

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Mobility, wireless technologies highlights of German tech show

HANNOVER, Germany—While the opening ceremonies for the CeBIT Computer Faire 2001 (http://www.cebit.de) were muted by the economic downturn by the time the week-long event closed March 28, things had taken on a more cheerful turn

Deutsche Messe, the show's organizer, reported that 830 000 showgoers clicked through the computerized turnstiles—an all-time high for the event

Interestingly, Deutsche Messe said that for the first time this year, shareholders had come to the show in large numbers to obtain firsthand information on the future prospects of the enterprises, often directly from the corporate executives themselves.

Visitor statistics meanwhile indicate that there was a significant increase in international participation—the proportion of foreign guests was up from 16 7 percent last year to 19 4 percent in 2001. Next year, CeBIT will return to an eight-day schedule, taking place from March 13-20, 2002

Following are some highlights from CeBIT Computer Faire 2001:

Ericsson gets behind mobile Internet

While individual networks around the globe are busy announcing plans for the high speed mobile Internet, using GPRS (general packet radio service) and 3G technologies Ericsson (http://www.ericsson.com) has announced an initiative to allow carriers to pool their resources and help networks generally.

Announcing the Ericsson Mobility World (EMW) initiative at CeBIT was Torbjorn Nilsson Ericsson's senior vice-president He said the mobile Internet industry needs to create a critical mass of applications and services that people really want and to get these to market as quickly as possible.

The initiative aims to act as a knowledge pool and resource for wireless carriers, developers and even third-party vendors. Plans call for the establishment of an informational Web site and other resources from this spring To kick-start the initiative, Ericsson has opened regional centres in New York, Dusseldorf, and Madrid all of which are already working on mobile Internet projects with the company's partners.

The Swedish telecommunications vendor says that it plans to establish centres in countries where there is early potential for the mobile Internet.

Perhaps most importantly, Ericsson has drawn its various developer projects in under the EMW umbrella, focusing on the mobile Internet from all aspects Plans call for the creation of an EMW developer zone, to include the 80 000-plus existing individual developers and 2 000-plus company development vendors in its embrace.

Motorola unveils new GSM mobiles

Motorola (http://www.motorola.com) unveiled a cluster of six new GSM (global system for mobile communications) mobile phones at CeBIT

The flagship of the new Motorola GSM phones is the Accompli 008 a tablet-style phone that bears more than a passing resemblance to the Palm handheld, but comes with a flip-up cover/microphone and a simple set of controls. Roughly the size of Motorola's StarTAC, the Accompli 008 has the same form factor, making it smaller than the Palm OS-driven Handspring VisorPhone The Accompli packs in a WAP microbrowser, handwriting recognition, email, text messaging and a range of personal information management features. The small, pocketable device acts as a GSM 900/1800 mobile phone and offers GPRS (general packet radio service) functions for high-speed mobile data It has 4 MB of memory and supports Java 2 Mobile Edition (J2ME) for executing mini-applets.

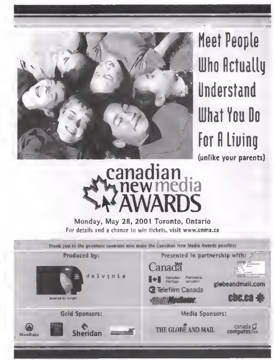
The next two phones Motorola unveiled were "v.dot" units—the v66 and v120. Both are triband, support GSM/PCS (personal communications services) 900, 1800 and 1900 wavebands. The phones also feature WAP and GPRS as standard as well as voice dialing and predictive text for text-messaging applications Also debuting were the T191 and T192—thin GSM 900/1800 (dual-band) handsets that feature WAP and a number of other regular phone features

Last, but not least, was the T288 Timeport, which builds on previous Timeport models with features such as tri-band (GSM/PCS 900, 1800, and 1900) and GPRS as standard The phone is also Motorola's first to offer Bluetooth wireless personal area network (PAN) support as an optional plug-in extra

Symbian extends its platform embrace

Faced with competition from the likes of Palm OS and Microsoft Pocket PC, Symbian (http://www.symbian.com) is fighting back by linking with a number of third-party vendors for connectivity options.

Symbian the company behind the portable computing platform of the same name is at an earlier stage in its development than its two main rivals, although reports suggest its operating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system so ahead of Palm and Pocket PC.

At CeBIT, Symbian officials announced deals with several companies, notably Aether Systems, fusionOne, Pumatech and Starfish Software, to provide a range of connectivity facilities.

The plan is to make Symbian-driven smart phones and PDAs able to plug in to a company network on an out-of-the-box basis, rather than requiring users to fiddle around with software on the host PC.

The linkup with Starfish is potentially most beneficial for Symbian, since Starfish is a Motorola subsidiary, meaning that the Symbian technology is guaranteed a place in the mainstream mobile computing and smartphone marketplace.

Announcing the plans and deals at the German computer show, Mark Edwards, Symbian's executive vice president, said the firm's vision is one where the mobile phone becomes a smart device for information access and communications.

"The key to delivering this vision is seamless access to the enterprise, Internet and desktop infrastructure," he said.

FusionOne is developing a SyncML client for Symbian that allows data entered into any Symbian-powered device to automatically be synchronized to the host PC. The client will ship by June.

Aether Intelligent Messaging (AIM), meanwhile, is developing Symbian interfaces for its proprietary software platform that powers the Aether wireless hosting service.

Pumatech is also Symbian-enabling its upcoming Syncit 2.0 software, which it said will include the ability to perform multi point, Web-based synchronization of calendar, email, contacts and tasks between Symbian-compatible devices and home PCs, work PCs and Internet PIMs.

Pumatech said its Intellisync 4.0 software, which supports two-way synchronization between a variety of PC based applications and Symbian-compatible devices, will ship by June.

Starfish Software's TrueSync technology, a SyncML based system, also will be Symbian-enabled, when the new version ships by the end of June.

Xircom gets behind Bluetooth

Xircom, an Intel subsidiary, has taken the wraps off a complete family of Bluetooth-enabled products, including Bluetooth-enabled versions of its communication PC Cards.

Wim Nagels, Xircom's product manager for Bluetooth, launching the new cards at CeBIT, said plans are also in hand for a Bluetooth-enabled USB adapter to be released later in the year.

The new Bluetooth-enabled products, he said, will simplify the lives of mobile professionals by providing cable-free synchronisation of information between Bluetooth devices.

Because Bluetooth is a seamless wireless personal area network, any Bluetooth-compliant device moving within range of the Xircom devices (10 m or 32.8 ft.) will automatically handshake with that device, and synchronize/transfer data at speeds of up to 700 Kbps, Xircom representatives said.

Xircom is also enabling its devices with 128-bit encryption to ensure that electronic eavesdropping on the Bluetooth signal is not possible.

Staffers with Xircom at CeBIT said that the firm's Bluetooth-enabled devices work to the full Bluetooth 1.x specification, at speeds of up to 721Kbps. The devices will also come with Xircom's Bluetooth comms package, Blueview, which allows complete control of the Bluetooth device, as well as streamlining the process of sharing data between Bluetooth-compliant devices.

—*Newsbytes*

Microsoft lines up builders for Tablet PCs

Continued from page 74

which he first showed off at an industry trade show in November 2000, "enables people to interact with their PC in a more natural and intuitive way through digital ink or voice input. And it helps them use their PC more effectively in everyday tasks like taking notes at meetings, working collaboratively and reading electronic documents."

The Tablet PCs, which look like oversized Palm handhelds, will sport a version of Microsoft's latest approach to its Windows operating system—Windows XP, which the company has said it will ship for desktop PCs in the fall.

The five PC makers Microsoft said have pledged to build Tablets PCs are Acer, Compaq, Fujitsu, Sony and Toshiba. Chip makers include Intel and Transmeta. Other manufacturers include makers of flat screen displays and pointing devices.

But consumers may be seeing Windows XP on their desktops long before they get a chance to write on—or speak to—a Tablet PC.

Compaq said its version of the hardware isn't expected to ship until 2002.

Microsoft has been promising that the release of Windows XP will offer its customers a more-stable PC operating system.

Although Windows XP will come in Professional and Home Edition versions, both the business and the consumer versions contain the core of what is now called Windows 2000.

The new Windows XP promises to make it easier for home PC users to organize their data and favourite applications, particularly if they share a computer with a number of people in the same household.

However, it's not clear how eager home-based users will be to install new operating system software.

Microsoft already has legions of Windows 95 users who haven't been motivated to upgrade to Windows 98 or the newer Windows Me.

—*Newsbytes*

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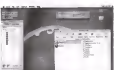
OS X has more delights than disappointments

By Justin Siemens



OS X is here and there's no going back, Mac users finally have a modern operating system to call their own. Most people won't be interested in X until more of the applications they use have been updated (expected in the summer) but those of us on the cutting edge can enjoy its enhanced stability and features today for a suggested list price of $195.

The OS includes many of the basic programs people use, such as email (Mail 1.0), Web browsing (Internet Explorer 5.1), word processing (TextEdit or AppleWorks 6.1) and multimedia apps (such as QuickTime 5.0, iMovie 2.0 and iTunes 1.1). All in all not a bad bundle for a brand new OS.

Inside the OS X box, you receive three software CDs, including a full bootable copy of OS 9.1, a System X install CD, and a System X developer tools CD. This marks the first time Apple has included developer tools with the consumer release of an OS, and it bodes well for the future of X. The development process is simpler than Classic Mac OS, and OS X will also run pure Java 2.0 applications, so there are many options for programming.

Installing OS X takes about 15 minutes and ends with a well-designed setup assistant that walks you through setting up your user account, email, and iTools information. It's nice to see Apple integrating iTools into the OS more tightly. In X, you can mount your iDisc volume in the finder by simply clicking a button on the finder toolbar—no more login and password.

The mail client works well, as does Internet Explorer, except when it's crashing or deleting your preferences, but it does say 5.1 Preview Release, so hopefully Microsoft can give us a more stable final version soon.

Classic works well with almost every application we threw at it, but some programs, especially Internet apps, seemed far less stable. Running Explorer or Entourage in Classic is likely to cause problems no matter how stable they were in 9.1.

A nice surprise was that many USB devices seem to work just fine with Classic loaded, despite warnings to the contrary. We found we were able to sync our Palm OS device with OS X by simply opening the HotSync manager in Classic and having it be the foreground app when we pressed the sync button on the handheld. Likewise, our Canon digital camera, which is not supported by X, worked fine if we opened the Canon software in Classic first.

Using this method, it appears many scanners will also work as long as you use a Classic app to scan, and since Photoshop is only available in Classic, this should work out well for many people as we wait for manufacturers to release new drivers.

Overall, X is filled with more delightful features than disappointments. Not having to restart the computer for days at a time is just one of the joys of working in X. It's not yet everything it could be, nor is it for everyone, but we suggest it's at least worth a look to see what we will all be using a year from now. It's available now from local Apple dealers or Apple Canada online (http://www.apple.com/ca/macosx/) ❑

Mac software updates

Important updates in the past month (source: http://www.versiontracker.com)

- Aladdin DropStuff, Expander Deluxe 6.0.1
- Apple AirPort 1.3 software
- Apple Firmware 4.1.7 & 4.1.8
- AppleWorks 6.1.2
- Apple Final Cut Pro 2.0
- Microsoft Office 2001 Service Pack 1
- Roxio Toast Titanium 5.0

Justin Siemens is a Macintosh IT specialist based in Vancouver, B.C. He can be reached at jsiemens@mac.com

Handspring unveils smallest Visor yet...

Hot on the heels of Apple's stylish titanium release (the new slim G4 PowerBooks) is a new Palm OS-based handheld with the same super slim metallic design.

The Handspring's Visor Edge is the slimmest Palm OS device available (dimensions 11.9x7.9x 1.1cm). It features a four-bit (16 shades) grayscale screen, internal Lithium Ion battery, Springboard expansion slot, new silent blinking alarm, and 8 MB of RAM.

The Edge is also the first Handspring unit to include a Palm III style flip-up cover. It comes in three metallic colours, titanium, blue, and red.

All in all, the Edge is the best grayscale Visor ever, and with its USB connectivity, it is fully Mac compatible out of the box. It's available at http://www.handspring.com for $395.

— Justin Siemens

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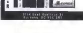

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Online & Connected

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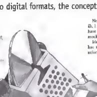
The rise and fall of copyright

With the popularity of peer-to-peer technology and migration of all types of content to digital formats, the concept of 'owning' work is taking a bash

By Chris Koam

It's a fair and reasonable notion: if you think it up, you get to reap the benefits of your good idea for long enough that you profit, but not for so long that your idea can't eventually enter the public arena and be of benefit to all.

For a few hundred years this system has worked. The laws surrounding copyright have mutated to keep pace with the times. Usually, changes have been driven by technological advances. New forms of distributing and recording intellectual property, such as photos, films, and audio recordings, have been invented and included under the aegis of copyright. And as long as copying was an analogue process in which quality degraded with every generation of copying, consumers gravitated towards the superior quality that licenced copies could deliver.



Now, content has gone digital; Napster and its ilk, like the printing press in its time, have changed the paradigm and made a mockery of current copyright laws.

Ideas have always had value. Their security has traditionally relied upon the need for information to be housed in a material way to police unauthorized use and/or copying. Before the printing press came into being there was little need to worry about unauthorized copies of books, manuscripts or maps. Few people could read, and even fewer had the resources to underwrite the labourious process of copying texts by hand.

The advent of the printing press however, changed everything. The technology to create endless copies of printed matter dropped the cost of text-stored information. The ranks of the literate started to grow and created an economic climate favourable to mass media. With the creation of a market whose product was access to ideas and information, rules became necessary to ensure that authors and other content creators received fair recompense for their work.

The Statute of Anne, formulated in Britain in 1710, became the first legal recognition of copyright. Not long after, the American Constitution, hallmark of rights and personal freedoms, made a point of including copyright, feeling the right to profit from one's ingenuity was the mark of a free society:

"The Congress shall have Power... to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."

Continued on page 82

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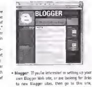
Blogger sites that 'really' get real

By Keith Schengili-Roberts

One of the latest crazes on television are "reality-based" shows that delve into the lives of "real people." If you're tired of shows that put quotes around the word "real," you should check out some Web sites that offer very personal perspectives on the Web and life in general.

Blogger is a free, automated Web based publishing tool that enables people to easily post pithy commentary accompanied by links and pictures usually on a daily basis Since Blogger came out, Blogger sites have proliferated, each offering a different perspective on a multitude of subjects.

(Note: Due to the often very personal nature of the entries on these Web sites they may not be suitable for all audiences).



- **Blogger**: If you're interested in setting up your own Blogger Web site, or are looking for links to new Blogger sites, then go to this site, which is Blog-central. It offers regular updates and focuses on various Blogger based sites. http://www.blogger.com
- **Phancy.com:** A daily dose of the interesting and the odd from Andrew Ranta, a Canuck who now lives in Fresno Calif The site is largely a collection of links of oddments found on the Web with commentary Typical links are to sites that feature descriptions like "the 10 most dangerous species of help desk callers," "The Satanic Hamster Dance," and "Pulp Fiction merged with Winnie The Pooh" Sometimes it reads like an abbreviated version of Slashdot—if Slashdot had a better sense of humour and cast its social view more broadly. http://www.phancy.com
- **This is My Brain on Blog:** This site is written by Suzanne Carter-Jackson a Web professional living in Vancouver who mues amusing insights into the Web with personal events

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The rise and fall of copyright

Continued from page 80

Canada first brought copyright legislation forward in 1924 The most recent revision of the Copyright Act came in 1997 Our country is currently involved in an ongoing process to update copyright rules to reflect new digital technologies, but as is the case with this issue everywhere, the pace of technology and legislation are two very different speeds.

Everything digital

Music graphics, movies, software, and creative works of every stripe are now stored digitally Bootleg and pirated versions abound. Governments and industry associations are trying to stem the tide of illegal copying with legislation and lawsuits. But, despite their efforts, the very concept of copyright seems to be on the ropes The Netizens of the world appear to be united in their desire for free content. Creative works, made digital, and succumbing to the maxim that information wants to be free are challenging the existing ideas about copyright. For content creators and the distributors who have acted as gatekeepers to their audience, there are plenty of reasons to be concerned about a world in which bandwidth is king, and copyright is a 20th Century concept.

As far back as 1993, Stewart Brand Grateful Dead lyricist and one of the founders of the Electronic Frontier Foundation (http://www.eff.org) was proclaiming the death knell of information ownership.

"All the goods of the Information Age—all of the expressions once contained in books or film strips or records or newsletters—will exist either as pure thought or something very much like thought Some might argue that information will still require some physical manifestation, such as its magnetic existence on the titanic hard disks of distant servers, but these are bottles which have no macroscopically discrete or personally meaningful form. [Author's note: especially with the advent of peer to-peer networking.]

"Some will also argue that we have been dealing with unbottled expression since the advent of radio, and they would be right. But for most of the history of broadcast, there was no convenient way to capture soft goods from the electromagnetic ether and reproduce them in anything like the quality available in commercial packages. Only recently has this changed and little has been done legally or technically to address the change," wrote Brand in an article at http://www.eff.org/pub/Intellectual_property/idea_economy.article

Never has the "information wants to be free" mantra been more clearly illustrated than by the meteoric rise and long slide of Napster Created by Sean Fanning in mid 1999, the program's ability to share MP3 files across the Internet suddenly had the wired world trading in music files like a kindergarten class with a bad Pokemon dependency

Napster must be a shoo-in for the Software Hall of Fame. Easily the fastest growing site in Web history, Napster passed the 25 million user mark in less than a year. A Media Metrix study measured 3 3 million Canadians using the service in January 2001 just the latest peak in a wave that was only 700,000 users strong six months ago.

In the process, Napster smashed previous ideas about fair use and copying for personal use. Fanning's brainchild worked so well that, while consumers loved Napster, creators and distributors became powerless to control the data flow Blanket copyright violation charges from the recording industry soon put Napster and intellectual property law in the spotlight and artists, legislators, and pretty much everyone on the street had an opinion on the nature of Napster

Napster bred "entitlement"

For most of its members, Napster appears to represent a right to which they feel entitled. Armed with the pre-conception that every musician lives like the rock stars the music industry promotes, Napster users don't think too hard about how far back the chain of copyright extends, seeing their downloads as booty taken from rich and bloated record companies.

There are plenty of artists who would beg to differ Lars Ulrich of the rock band Metallica, was quick to begin legal proceedings against Napster seeing the file sharing as uncontrolled and unauthorized access to something that was rightfully his.

Corey White, vocalist and songwriter for Showcore, has had more than one person come up to him and excitedly recount how they downloaded a song file recorded by his former band, DDT but when he asked whether they bought the album, the answer was usually "No."

"It's a lot of hard work to make a record. Every royalty cheque from SOCAN [Society of Composers, Authors and Music Publishers of Canada], even if it's not a lot, is money that I earned," says White. "When you download my songs from Napster, you're taking what's mine without asking me"

An attitude that equates the creation of the music with a faceless record company rather than a person is bound to create problems. But, other artists believe Napster is a tool that, despite some short-term loss, may represent a great opportunity for musicians to regain control of their industry

Despite the fact that every successful Napster download represents a potential royalty payment lost, there are rock stars on the online bandwagon. Courtney Love is one who has come out in favour of Napster, citing its democratizing aspects and lobbying eloquently for a system that returns creative control to musicians. She has proposed an online tip system that acts as a virtual passing of the hat with each download. Public Enemy's Chuck D is another musician who sees the technology as a positive democratizing force and its suppression as an item on the corporate agenda.

Philip Cacayorin, who has been a musician since age four and a producer, composer engineer and acoustic inventor in Hollywood for two decades, is eager to merge music and new technologies. "A technology may change an industry, but it also provides new and beneficial opportunities that contribute to the worldwide communication process It is the responsibility of the content distributor to create these innovative marketing platforms, designs, and campaigns that will support the content creators."

Despite an appeal that bought it some time, Napster has lost this battle A recent American court decision ordered the company to filter from distribution (within three days of the removal request) any song file name accompanied by proof of copyright Losing in the courts has cramped Napster's style But despite filtering and rights recognition issues to address, the company can still boast a 50-million member base worldwide

That asset has drawn support from global media giant Bertelsmann, and interest from another, Vivendi Whether it's Napster, Gnutella, or some as yet-unnamed and unknown next version of this new idea, there's great potential for online music

In a statement regarding the February 12 court decision to hold Napster liable for copyright violations, Brian Robertson, president of the Canadian Recording Industry Association showed that Canadian youth, benefiting from the highest per capita broadband capability in the world, were a market waiting to happen.

"Canadian youth, age 12 to 24, are the

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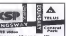

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Creating, using rollover graphics: Part II

By Keith Schengili-Roberts

Last month, we looked to the basics of creating a "rollover" graphic—one that changes (or "rolls over") when a user passes their mouse over it, which is a common way to indicate a graphic is actually a link.

We created two simple images, one "before" image and one "after" image to indicate the change of state. Then we added the JavaScript necessary to make the effect work. This basic effect is relatively easy to reproduce and is perfect if you are only using a few rollover graphics.

However, if you are planning to use this effect for something like a navigation bar (or two) on a site that already contains a large number of rollover graphics, you may find that it takes too long for the rollover images to load and display the intended effect correctly. If this is the case, you'll need an image "pre-loader" that will download all of the rollover images and store them in memory until they are needed. In this article, we'll look at image pre-loaders.

Building from the Basics

Last month, we created a page containing a single rollover display that displayed two images, store_white.gif and the rollover image store_yellow.gif. Here's what the code for that page looked like:

```
<html>
<title>Rollover Demo</title>
<script language="JavaScript">
if (document.images) {var store_white=new Image()
store_white.src="store_yellow.gif" )
</script>
</head>
<body>
<a href="store.html" onMouseOver="if (document.images)
document.store_white.src='store_yellow.gif' "
onMouseOut="if (document.images)
document.store_white.src='store_white.gif' "><img
src="store_white.gif" name="store_white" border=0></a>
</body>
</html>
```

We will build on this code, adding to it the necessary JavaScript functions to add an image preloader.

The following JavaScript code adds the first part for the image preloader, which can be integrated easily into the header of the page listed above. It consists of three parts: the first stores the images into memory, the second specifies the names of the files to be stored, and the third activates the program. Here's the first part of the necessary code:

```
function MM_preloadImages() {
  if (document.images) {
var imgFiles = MM_preloadImages.arguments;
if (document.preloadArray==null) document.preloadArray
= new Array();
var i = document.preloadArray.length;
with (document) for (var j=0; j<imgFiles.length; j++) if
(imgFiles[j].charAt(0)!="#"){
  preloadArray[i] = new Image;
  preloadArray[i++].src = imgFiles[j];
  } }
}
```

What's happening above is that we are creating a new function called MM_preloadImages() that is designed to hold any files we send it into memory. After initiating a new array in memory to store the images, it cycles through until all of the intended images we send to it are stored to memory.

Now we need to send this function all of the images we want to store in memory. A convenient way of doing this is to create a list of such images, then call this list from within another function, which will be called when the page begins to load. In this case, we are calling the function loadImages(), and telling the program the names and location of the individual rollover images (and giving it a unique 12-digit identifier).

```
function loadImages() {
MM_preloadImages('/images/home_yellow.gif' '#9537776
12345')
MM_preloadImages('/images/news_yellow.gif' '#95377761
2346'),
MM_preloadImages('/images/store_yellow.gif' '#95377761
2347')
MM_preloadImages('/images/stuff_yellow.gif' '#953777612
348');
MM_preloadImages('/images/resources_yellow.gif' '#9537
77612349')
MM_preloadImages('/images/contact
us_yellow.gif' '#953777612350')
MM_preloadImages('/images/help_yellow.gif' '#953777612
351')
}
```

In order to launch that part of the program,

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The rise and fall of copyright

Continued from page 82

world's top downloaders of music. A December survey by Ipsos-Reid of Vancouver confirmed that two-thirds of young Canadians had downloaded music or an MP3 file in the survey period," Robertson said in his statement. "Retail sales of sound recordings in Canada fell by six percent in 2000—a drop of $84 million. At least half of this figure we attribute to the influences of Napster and related technologies."

With those kind of numbers, the record companies' failure to embrace the Napster-style of content delivery, develop sufficiently robust encryption, and sufficiently inexpensive pricing looks a lot like a missed opportunity.

Having won a court decision to curb Napster and force it to filter and remove copyrighted works from its databases, the music industry has gained breathing room.

However, the next generation of software programs could effectively sever the last link to the ability to filter and remove song files.

Peer-to-peer networking software would make a mammoth task of enforcement. Such a system would be impossible to shut down outside of a program of massive cyber repression that allowed governments and legal agencies access to an individual's personal files.

Short of encouraging the rise of Orwellian authoritarian tactics—a move unlikely to increase leisure spending—the record companies need to come up with a workable solution quickly. They could do worse than adopt the existing technology and negotiate licencing fees before true peer to peer networking programs like Gnutella gather momentum and market share.

It's important to realize that the issue is media independent. It doesn't matter if it's an MP3 file, an e-book, or an image. The way we look at ownership of ideas may be irrevocably changed by technology.

The current technology is such that the creator loses control of a work almost as soon as the digital ink has dried. Traditional stakeholders must try to maintain control over distribution, and undoubtedly hackers will try to crack their security.

Without legal and technological protections for intellectual property and a way to inculcate consumers with a moral sense that swapping files Napster-style is wrong, there's a real danger that every effort, be it art or not, becomes essentially a one time paycheque that gets posted online once and multiplies to fill demand.

The downside is loss of revenue, unless the author is vigilant in enforcing his or her rights. The upside, ostensibly, is increased brand awareness for that author, artist, or musician.

At this point it seems like most of the money will be going to lawyers for a while. Which is probably good because most artists aren't in it for the money alone. In that sense much of the music industry has yet to change.

It's probably going to be a while before a copyright ethos for the digital age is in place. But the landscape has definitely shifted. A lot of power has devolved to the creator. But, without buzz and hype that power is somewhat meaningless in monetary terms. Just because you can post a song to millions of potential listeners doesn't mean that they will all listen.

The music business, like all show biz needs advertising and good reviews. The companies that find a way to placate the copyright lobby, provide idiot-proof technology, and filter the

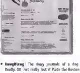
---

Blogger sites that 'really' get real

Continued from page 82

and thoughts. The sub-title for this site, "Suzanne talks to herself when the world pretends not to listen," is apt—the mix of Web tech and the personal perspective is often insightful.
http://www.synaptompulse.com/fimg/

- **EyeBlog:** Created by graphic artist "Ann-S-Thesia" (aka Ann Stretton), this visually stimulating site incorporates lots of entries about life as a graphic artist. If you visit, make sure you see the gallery of her often eye-popping creations.
  http://www.eyebalm.com/



- **DawgBlawg:** The diary journals of a dog. Really. OK, not really, but if Plato the Boston terrier could write, it would probably look something very much like what appears on this site. An often humourous perspective of a dog's life (created by the author of EyeBlog, listed above).
  http://eyebalm.com/dawgblawg
- **ColdMarble Musings:** This site is dedicated to photographs with commentary of monuments and gravestones around the U.S. While it may sound macabre, it offers an interesting look at memorial sculpture, often with a dose of history. Don't be put off by the topic—an unusually compelling site.
  http://www.djbn.com/coldmarble/musings.html
- **Living Art:** While not a Blogger-driven site, this one is still worth mentioning. It features personal photojournalism by Catherine Jamieson, along with a journal detailing her ongoing fight against HIV, her artistic sensibilities, and her life as a professional photographer in Nova Scotia. A very elegant and often touching Web site.
  http://www.livingartonline.net/
- **the bug update:** This site, by Canadian expatriate writer Randall van der Woning, is subtitled "the adventures of a big white guy living in Hong Kong." His notes on life in Hong Kong include some interesting analyses of the culture he lives in now, and its contrasts to his life back in Canada.
  http://www.vanderwoning.com/
- **Who would buy that?:** Proving that Blog sites are not limited to personal musings, this site looks at the plethora of junk and weird things that find their way onto Web auction sites. All I can say is that this site more than lives up to its subtitle "auction oddities from all over the Web."
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⁺ESP is estimated street price. Prices may vary by reseller.

Creating, using rollover graphics

Continued from page 84

we call the lotsofimages() function from the <body> tag of the page which can be done in the following manner:

```
<body onLoad="lotsofimages()">
```

Swapping files

OK, we have the portion of the JavaScript code that loads the images into memory. Now we need additional JavaScript functions that swap the images in and out of memory and which are also, ultimately called from within the page. This is done using two additional functions, in this case called MM_swapImgRestore() and MM_swapImgData(). Here's what they look like:

```
function MM_swapImgRestore() {
 if (document.MM_swapImgData != null)
for (var i=0; i<(document.MM_swapImgData.length-1);
i+=2)
  document.MM_swapImgData[i].src =
document.MM_swapImgData[i+1];
}

function MM_swapImage() {
 var i,j=0,objStr,obj,swapArray=new Array,oldArray=docu-
ment.MM_swapImgData
 for (i=0; i < (MM_swapImage.arguments.length-2); i+=3)
{
objStr = MM_swapImage.arguments[(navigator.appName
== 'Netscape')?i:i+1];
if ((objStr.indexOf('document.layers[')==0 &&
document.layers==null) ||
(objStr.indexOf('document.all[') ==0 && document.all
==null))
  objStr =
 'document'+objStr.substring(objStr.lastIndexOf('.'),objStr.len
gth)
obj = eval(objStr)
if (obj != null) {
  swapArray[j++] = obj;
  swapArray[j++] = (oldArray==null || oldArray[j-
1]!=obj)?obj.src:oldArray[j];
  obj.src = MM_swapImage.arguments[i+2];
} }
document.MM_swapImgData = swapArray;
}
```

This code works with the array of stored images, swapping them in and out of memory as needed. It also includes a simple browser detection routine (notice the check to see if the browser is Netscape or not) in order to send the correct JavaScript routine for swapping the images to the right browser.

Now to add some "icing to the cake," let's add some additional code that displays the name of the rollover graphic—instead of the URL that it points to—in the lower-left corner of the browser, in what is known as the "window status" message area. This is done using another JavaScript routine (function dm()) much of which is actually devoted to checking which browser is being used in order to display the name correctly. It looks like this:

```
function dm(msgStr) {
  document.returnValue = false;
  if (document.images) {
 window.status = msgStr;
 document.returnValue = true;
  }
}
var showMsg = navigator.userAgent != "Mozilla/4.0 (com-
patible; MSIE 4.0; Mac_PowerPC)";
function dmim(msgStr) {
  document.returnValue = false;
  if (showMsg) {
window.status = msgStr;
document.returnValue = true;
  }
}
```

In this code function dm() looks for a string value presented from within the page, which is then displayed in the window.status field in whichever browser has been detected.

Integrating the JavaScript routines

Now we have to marry this code to the rollover code displayed within the page. Ensuring that we have already called the lotsofimages() function from the <body> tag, an individual rollover element now looks like this:

```
<a href="shop" onMouseOut="MM_swapImgRestore()"
onMouseOver="MM_swapImage('document.image3','doc
ument.image3','images/store_yellow.gif','#955777612347')
;dm('Store')"><img src="images/store_white.gif"
name="image3" width="67" height="22" alt="Store" bor-
der="0"></a>
```

Admittedly, there's a lot going on here, but it is easy to explain when you break it apart and look at its individual pieces. Notice how we are still using the onMouseOut() and onMouseOver() functions from the initial code we created, contained in the first listing in this article. They still point to document.Image, but now they also call the MM_swapImgRestore() and MM_swapImage() functions, which swap images that have been preloaded in and out of memory. Note also how we are calling the unique identifier for the image file ('#955777612347') and how the name="image3" in the <img> reference matches that used within the anchor link (document.image3)—these ensure that we are calling the right image from the image swapping function. Finally, the dm('Store') is read by the dm() function, and in this case, displays the word Store in the window status field of the viewer's browser.

All you have to do at this point is add this same code—making sure you've got the unique identifiers right—to all of the other images you wish to preload on your page. ❑

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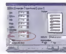
Managing long documents

Creating a 50-page document is much more complicated than creating a two- or three-page file. A larger document is also more difficult to navigate, which should be taken into consideration when creating it. Including elements such as numbered pages and a table of contents will help make it easier for readers.

This month, we'll look at some basic Word 2000 tools for working with long documents. Most of these work just fine as Word 97 too. Similar tools are available in other word processors. Simply check your program's Help feature to find out these commands.

Basic headers and footers

Headers and footers are invaluable tools for formatting long documents as they allow you to place the document description and page numbers automatically on every page. So, if you print a large document and mix up the pages, it's easy to reassemble in order.



If you've added a page number to your footer and it won't print, chances are the footer's From Edge setting needs to be increased slightly.

When creating your header or footer text, you type the text in once and it automatically appears on every page of the document. It is usual to place the title of your document in the header (at the top of the page) and the page numbers in the footer (to appear at the bottom of the page).

To access the Header and Footer commands, open your document and choose View, Print Layout (in Word 97 it is called Page Layout). This shows your document as it will appear when printed.

Choose View, then Header and Footer, and the Header and Footer toolbar will appear on the screen. Your cursor will be positioned inside the Header area, which is bordered with a dashed line. To switch to the Footer area, select the Switch Between Header and Footer button on the Header and Footer toolbar. Clicking this button again will take you back to the header.

To add a page number to the footer, switch to the Footer and double-click where the number is to appear. Click the Insert Page Number button on the Header and Footer toolbar to insert the special Field Code for the page number into the document.

This tells Word that the page number should go here. If you see the code {Page} in place of the actual page number on the screen, it's because you have the Field Codes display turned on. Toggle this setting to Off by pressing Alt + F9.

More complex page numbers

You can add text and symbols around your page numbers to enhance them—for example you can format them to look like -Page 2-. To do this, add text either side of the page number code that Word inserts for you. You can also select the page number with your mouse and apply any text formatting to it, for example, set it to a different font or size.

Often for a large document, you'll want to leave the first page blank with no header or footer. You can do this easily from within the Header and Footer area by clicking the Page Setup button on the Header and Footer toolbar, choosing the Layout tab, enabling the Different First Page checkbox, then clicking OK. To create the header or footer for the remainder of the document, move to the second page and proceed in the manner outlined above.

In this case, you may also want the actual page numbering to begin on the second page of the document and for it to read Page 1—so you're not numbering the cover or title page at all. To do this, select the footer, then choose the page number with your mouse, and click the Format Page Number button. Set the Page numbering to start at 0 and click OK. The second page of the document will now be numbered 1.

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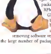
Linux for Newbies

Installing packages from source

By Gene Wilburn



Back as Part 17 of this series, we learned how to install and remove packages using the RPM package manager. RPM and its Debian GNU/Linux counterpart, DEB, have made installing and removing software very simple. Given the large number of packages in a modern distribution, installing and removing binaries with package managers has become an accepted convenience.

Convenience, however can lead to dependence. Once you form a dependency on pre-rolled packages, you give up a considerable amount of decision making to those who maintain the packages. You take it on trust that they know what they're doing. Most of the time this works out, but if you ever encounter one of the "RPMs from hell" you'll think twice about the wisdom of accepting RPMs blindly.

In general, if you use a Red Hat or Mandrake system, and obtain "official" RPMs from Red Hat or Mandrake, you won't have too many surprises. But contributed RPMs are a crap shoot. They can be superb or downright stupid and ill conceived.

Another problem with RPMs, even good ones, is that they frequently don't install files where you think they belong. I take issue with Red Hat, for instance, for putting the Apache Web server's doctree and cgi-bin in */home* under */home/httpd*. Red Hat also scatters the Apache binaries around the file system and it does not even use Apache's own apachectl control program. If you already know how to admin an Apache Web server, the Red Hat implementation is confusing, non-standard and illogical.

Should you care where things go as long as everything works? Of course you should! Linux is about attitude and paying attention to details is part of that attitude. Not that everyone shares the same opinion about file locations. Flame wars often break out over where things should be located on a Linux filesystem and there is no absolute standard to which every distribution adheres. But you should at least have some logical preferences.

The way around RPM issues is to grab source code for the key products that matter the most to you and do your own installation.

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Training smarter online

By Jacques Surveyer

During a keynote speech at a trade show last year Cisco's chief executive officer John Chambers, promised an online learning and training revolution based on the Internet. And although Cisco stock is down from a year ago, Chambers' prediction was on the mark. More companies are starting to deliver training and even support services over the Web.

On first reflection, one would think those delivering online learning were at a disadvantage compared to those offering classroom education and training.

> In a rapidly evolving, competitive environment that demands a workforce with constantly refreshed skills, many are turning to the Web to deliver training and support when and where it's needed

This perception is backed by several statistics from Jupiter Media Metrix that show the Web's reach to North American families is small. Fewer than 60 percent of households in Canada and the U.S. have PCs, and of those with PCs, not all are connected to the Net.

Worse yet, of those connected households, fewer than 20 percent have high speed links—DSL or cable modem. So at best, only 12 percent of the potential audience is ideally equipped to handle online learning.

But these numbers don't seem to matter because online training is on the move, according to industry watcher Training SuperSite (http://www.trainingmag.com).

Here are some of the relevant trends from the 1999 and 2000 industry reports:

- Training dollars are down from US$62 billion in 1999 to US$54 billion in 2000, but use of computers in formal training is up from 14 percent in 1999 to 18 percent in 2000.
- Six percent of all formal training is now done online to remote sites.
- Finally, of all computer-delivered training, a whopping 55 percent is about teaching computer skills.

So it should come as no surprise that some of the most notable examples of online training and support come from the computing industry.

Case 1: Casahl Technology

Casahl Technology is a small but growing software vendor that develops data integration products like Replic Action and ecKnowledge. These programs are used as middleware, connecting big online databases (DB2, Oracle, SQL Server) to Lotus Notes/Domino and Microsoft Exchange systems.

Casahl is one of the top-rated vendors in the industry. And one of the ways it has achieved this is through online training using Centra (http://www.centra.com) and mentoring plus support using WebEx (http://www.webex.com).

Centra's Web software allows Casahl to conduct seminars with users all over the world in English or Spanish.

After users sign on via their browsers they can see and hear presentations or chat "behind the scenes" with proctors who answer typed in questions. This background dialogue clarifies points—so a student won't get lost—without slowing down the main presentation.

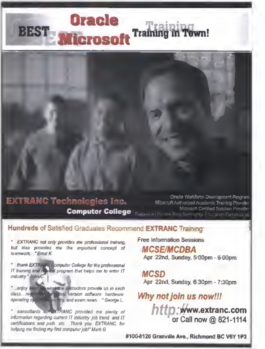
With Centra, small quizzes can be administered with immediate feedback, so Casahl's instructors can change pace or emphasis to match a client/student's understanding.

WebEx, on the other hand, is used more for one to one or small-group mentoring and support functions.

In addition to being able to make presentations, Casahl support staff use WebEx to demonstrate or share any application, lead a tour on a user's machine (stepping them through the process of debugging, for example), go into a Net session—and all of this across firewalls and using popular browsers.

As one Casahl support specialist noted, "we can get right to the heart of a problem very fast." So online learning for Casahl has been extended to premium online support. But online training is not reserved for computing courses, as we shall see in the case of

Continued on page 92



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Managing long documents

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In place of the page number alone, you can adjust the numbering to read Page X of Y so the footer is more informative. To do this, choose View, Header and Footer, then move to the Footer area. Now, instead of clicking the Insert Page Number button, choose Insert AutoText, Page X of Y and the code for this footer text will appear.

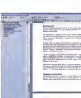
Another option for a long document is to include the document's filename in the document footer. You can do this by choosing View, then Header and Footer. Move to the Footer and choose Insert AutoText, then select Filename from the menu. If you also want to include the path, choose Filename and Path instead.

If you find it time-consuming to continually choose View Header and Footer, you can move directly to the header or footer area from Word's Print Layout view. To do this, double-click in the header or footer on the screen and it will take you there immediately. Similarly you can return to your document by double-clicking anywhere outside the header or footer area.

You may wonder why your headers and footers look the way they do. The answer is that they are formatted using the default Header and Footer styles, which are the same as Normal Style. If you want to use your own formatting style for your headers and footers, choose Format, Style, select the style you want, click Modify Format, then Font. Make the changes and click OK.

Missing page numbers

One of the most frustrating aspects of page numbering is when you think it is set up correctly and yet they won't print out. If you run into this problem and have included page numbers at the foot of a page, chances are that the footer text is being forced to print so far down the paper that it is no longer in the print area.



Word's Document Map helps you to move around a long document. Simply click a heading in the left window and that portion of the document will appear in the larger window to the right.

You can solve the problem by selecting File, Page Setup clicking the Margins tab, and slightly increasing the From Edge measurement for the Footer. Experiment to find the smallest increase that still allows your page numbers to print properly.

You may also find that if you're using A4 paper rather than US Letter paper, that the page numbers will print too high on the page and the text never seems to fill the page properly. This is often because the printer is not set correctly for A4 paper. To check your settings, choose File, Print, Properties, ensure A4 is selected, click OK then Close.

Also check the document is set to A4 paper by choosing File, Page Setup Paper Size, select A4 from the paper size drop-down list, then click OK.

Breaking up text

When you create long documents, break up text heavy pages with headings. These give readers a way to pause on the page and not lose their place, as well as helping them find their way around the document.

The simplest way to format headings is to use a style like the default heading styles Heading 1, Heading 2, etc. When you format headings using styles, you can easily create a table of contents for your document.

To apply a style to a heading, select the text of the heading with your mouse and choose the style from the Style drop-down list on the Formatting toolbar. If you can't see the style you're looking for, hold the Shift key as you click the drop-down list to display the full list of styles. You can also format text to one of the three main heading styles (Heading 1, Heading 2, and Heading 3), using the keyboard shortcuts Control + Alt +1, Control + Alt +2, and Control + Alt +3.

As previously mentioned, a benefit of using these styles to format headings is the ability to create a table of contents. To do this for a document with headings formatted using the default styles, place your cursor where you want the table of contents to appear in your document, usually at the beginning.

Choose Insert, Index and Tables, the Table of Contents tab, choose the format you want to use from the Formats list (you'll see a sample of the format in the dialogue), and click OK. Word will automatically add a table of contents to your document. If you see a field code similar to {TOC \o "1-3"} and not the table itself, you can view the table by pressing Alt + F9.

Navigating a long document

An additional benefit to using styles to format headings in your document is the ability to use the Document Map for quick navigation. To see the Document Map for any document, choose View, then Document Map, and the screen will change to show a list of the headings in your document down the left of the screen. Click any heading in the list and you'll automatically move to that part of the document in the main editing area.

If you're using Word 2000, you can navigate large files using either your table of contents or the Document Map. Each page number in the table of contents is hyperlinked to the appropriate heading in the document. Simply click on any page number and you'll be taken to that part of your document. You can return quickly to the top of your document by pressing Control + Home.

Another way to navigate a long document is to use the Find option in the Edit menu to search for specific text. For example, if you're working on a lease and you want to find the section relating to the option to purchase, you can simply search for the phrase Option to Purchase. Provided the text you're seeking doesn't appear too many times in the document, you can click Find, then Find Next to move from one occurrence of the word or phrase to the next. Click Cancel when you find the correct occurrence.

Adding captions

Whenever you add images or charts to a document you should number each one and include a description. Word makes easy work of adding captions to images—simply select the image, choose Insert, then Caption. Type the description of the image in the dialogue and click OK. The image will be numbered and captioned for you. If you then want to add other images to your document that would appear before this one, or to remove one that appears before this one, the numbering will be altered automatically.

If you want to reference the caption in the document itself, you'll first need to turn the caption from a text box into a frame. To do this, select the text box containing the caption, choose Format, Text Box, Text Box, Convert to Frame then click OK. Now create the reference in your text by choosing Insert, then Cross reference. From the Reference type, choose Figure. From the Insert Reference To drop-down list, choose the type of reference you want and, from the displayed list, choose the figure you want to refer to. You'll now have a reference in your document linked to the figure itself and, if the figure number alters because you add one before it or remove one, the document will be updated accordingly. ❑

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Installing packages from source

Continued from page 88

It would be extreme to do this with all packages, but there are certain packages for which hand compiling makes more sense than installing binary packages via RPM or DEB

Use the source, Luke

For example, if you're using Linux to run an Apache Web site, you're better off compiling Apache and any related modules by hand. This gives you greater control of how the package is compiled and you can choose your own locations for the parts. You will also find it's easier to keep Apache and modules such as PHP up to date if you use source. Whenever there's a new version or a patch, you just grab the source, recompile and it's done. Waiting around for someone to create a new RPM is gormless.

So what we're going to do in this installment is put on our Unix hardhats, grab our metal lunch buckets, deinstall the Apache and PHP that Red Hat puts on the system, and redo the installation from source. It's really not hard at all and it's a valuable Linux skill.

De-installing Apache and PHP

A quick word about deinstalling RPMs: When a package is removed, the RPM doesn't normally remove any data associated with the package. Hence, if you already have some Web site material under /home/httpd/html it will still be there afterwards and can be moved to its new location. However, it is always prudent to do a backup first just in case.

As you may recall from Part 17, we deinstall with the rpm -e command. However when I attempt to deinstall PHP from my stock Red Hat 6.2 system I get the following.

```
# rpm -e php
error: removing these packages would break dependen
  cies:
        php is needed by piranha-gui-0.4.12
        php = 3.0.17 is needed by php-imap-3.0.17-1.6.2
        php = 3.0.17 is needed by php-ldap-3.0.17-1.6.2
        php = 3.0.17 is needed by php-manual-3.0.17-1.6.2
        php = 3.0.17 is needed by php-pgsql-3.0.17-1.6.2
```

What I have to do is deinstall each dependency separately:

```
# rpm -e php-pgsql
# rpm -e php-manual
# rpm -e php-ldap
# rpm -e php-imap
# rpm -e piranha-gui
# rpm -e php
```

When I deinstall Apache, I must similarly get rid of mod_perl first.

```
# rpm -e apache
error: removing these packages would break dependen-
cies:
        webserver is needed by mod_perl-1.21-3

# rpm -e mod_perl
# rpm -e apache
cannot remove /var/log/httpd - directory not empty
cannot remove /home/httpd/html - directory not empty
cannot remove /home/httpd/cgi-bin - directory not empty
cannot remove /home/httpd - directory not empty
cannot remove /etc/httpd/conf - directory not empty
```

The cannot remove messages are good because they say my existing Web files and configuration files are not being removed.

Obtaining Source

To obtain source code, you simply go to the Web site that houses the code, find the download section, and download the source packages (frequently called "tarballs") into a directory. I prefer to download source code into /usr/local/src. Hence I fire up Netscape (or Lynx) and first go to http://www.apache.org, then to http://www.php.net and download the following files to /usr/local/src.

```
# ls *gz
-rw-r--r--   root  root   1928677 Mar  3 19:2_
apache_1.3.19.tar.gz
-rw-r--r--   root  root   2459184 Mar  5 19:2_ php-
4.0.4pl1.tar.gz
```

Notice that both files end in tar.gz. This indicates Unix tar files that have been compressed using gzip (GNU Zip is unrelated to WinZIP). The next step is to unzip the files then untar them. This can actually be done in a single step but for the first time out, let's do each step manually.

```
# gunzip *.gz
# tar xvf apache*.tar
# tar xvf php*.tar
```

You will see a lot of screen activity as these packages are untarred into their respective directories. You can now remove the tar files—they're no longer needed.

```
# rm -i *.tar
rm: remove apache_1.3.19.tar? y
rm: remove php-4.0.4pl1.tar? y
```

Now issue ls -l to see the directories that were created.

```
# ls -l
drwxr-xr-x   8 1006   1006       4096 Feb 26 17:17
apache_1.3.19
drwxr-xr-x  15 510    users      4096 Jan 11 18:39 php-
4.0.4pl1
```

We will be working in these two directories. If you wish, you can first tidy up the ownership of these files and directories with the command:

```
# chown -R root.root /usr/local/src/*
```

Compiling from source

Let's visit Apache first. Before we get started we should give some thought to where we want Apache binaries and files to live. If your Linux server is an active Web server, you may prefer a directory such as /var/www or even /www for your Apache site. I personally like /usr/local, the traditional Unix place to put things that are "localized"—software that is not part of the base operating system. Hence I am going to use /usr/local/apache as my destination.

Use a cd command to put yourself into the Apache directory. Remember, you only need to type a bit of it, then hit Tab for filename completion, e.g. cd apach[TAB][ENTER]. Take a look at what's inside.

```
# pwd
/usr/local/src/apache_1.3.19

# ls -F
ABOUT_APACHE   Makefile.tmpl     cgi-bin/        icons/
Announcement   README            conf/           logs/
INSTALL        README.WIN.TXT    config.layout   src/
KEYS           README.configure  configure*
LICENSE        WARNING-WIN.TXT   htdocs/
```

The ls -F command shows a very typical source code directory structure with source directory (src/) plus additional material (such as conf/ and htdocs/). There are some key files in the top directory: README, INSTALL, and configure. The README and INSTALL files are essential reading. They give you the compile instructions and options.

The README file, for instance, lets us know that there are two different ways to install Apache:

```
Installation
  ------------

  From Apache version 1.3 and up you have two possibili-
ties to build and install the Apache package: The old com-
monly known but manual way from Apache 1.2 and below
and the new out-of-the-box way through the new Apache
Autoconf-style Interface (APACI). For detailed instructions
see the file INSTALL in this directory.
```

The INSTALL file gives those directions. We'll be using the newer APACI method.

There are three basic steps in building and installing any package from source:

1 configure
2 make
3 make install

In the "configure" step, you decide things like which directories to use and which modules to include. The "make" step runs a Make script that takes input from configure then uses your C compiler to actually compile the source code into binary executables. If the code compiles cleanly, with no errors, you then proceed to "make install," which puts the newly created binaries in their respective directories. You can then test the setup.

For the purposes of this exercise, let's assume that, initially, there are no special modules you want to add to Apache, so let's go with the defaults. Using the backslash (\) to allow us to split long command lines across several lines, let's proceed:

```
# ./configure \
> prefix=/usr/local/apache

Configuring for Apache, Version 1.3.19
 + using installation path layout: Apache (config.layout)
Creating Makefile
Creating Configuration.apaci in src
Creating Makefile in src
 + configured for Linux platform
 + setting C compiler to gcc
 + setting C pre-processor to gcc -E
 + checking for system header files
 + adding selected modules
 + checking sizeof various data types
 + doing sanity check on compiler and options
Creating Makefile in src/support
Creating Makefile in src/regex
Creating Makefile in src/os/unix
Creating Makefile in src/ap
Creating Makefile in src/main
Creating Makefile in src/lib/expat-lite
Creating Makefile in src/modules/standard
```

As you can see, the configure step did quite a bit of setup work. Now we go to the actual compile. If this is your first time compiling a program, be prepared to see a lot of strange-looking material displayed on your screen. It's all normal and can be explained (in C programming terms) but it's not your everyday kind of messaging. It also takes a while to complete. The speed of compilation is directly related to the speed of your CPU, but Apache normally doesn't take very long to compile.

The compile step is easy:

```
# make
```

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Training smarter online

Continued from page 89

Continental Airlines using Saba

Case 2: Continental Airlines

Continental has turned around from being the butt of jokes in the 1980s to the fifth largest airline in the world, rated as one of the best to work for and travel on. But an increasingly stringent regulatory agency in the U.S.—the Federal Aviation Administration (FAA)—mandated training for all airline employees with strict compliance reporting requirements that were taxing the company's highly centralized instructional services.

So Continental revamped its training procedures using Saba Enterprise Learning, which meant local supervisors and employees could schedule and manage their own training while using both in house and remote course sign-up with the same look and feel on browser or PC. Saba's system tracks prerequisites, course completions, and acquired competencies.

At the same time Continental was able to maintain and deliver support certification and compliance analysis that meets both the FAA's tough reporting requirements and its own desire to assess the ongoing capabilities status of its workforce.

During its start up week in July 2000, one of the busiest flying times in the year, the system logged 200,000 hits without a hitch. The biggest payoffs are that Continental's more than 25 000 employees have remote or centralized access to training that is much more accommodating to their schedules, while management can more readily report to the FAA in the confidence that it is tracking compliance gaps, and can demonstrate how it is moving to eliminate them.

Case 3: ADP

Automatic Data Processing (ADP) is a leader in processing payroll and billings for a wide variety of organizations. It has been in the business from the days of Cobol and mainframe primacy.

Which is the problem. ADP's workforce needs online and Web-related skills. In contrast to a number of large corporations, like Ernst & Young, IBM Global Services, and Corel, that are laying off consultants, programmers, and other staff (trading up skills, trading down salaries, according to one IT analyst), ADP is taking the approach that rapid retraining can pay off. Companies such as Charles Schwab and Imperial Oil have also taken this approach.

To this end, some companies are doing a reverse co-op program, sending students back to colleges and universities on a part time basis. Schwab is making online training resources available at lunch hour and at home, along with giving employees access to classic classroom training. ADP is putting together its own retraining curriculum and processes with a pilot program for about a dozen coders and analysts.

ADP believes the retraining time and costs—as well as the employee goodwill created—will outweigh the layoff expenses and new hiring and training costs. The company has developed a diverse but fairly structured retraining program that includes two weeks of self-paced work with online multimedia courses; 14 weeks of instructor-led classroom training; then a return to online, on-the-job courses specifically chosen to close the skills gaps identified for each student.

ADP has found the costs of setting up retraining are substantial but the benefits of targeting the development of its employees allows them to get specific ADP aware skills on the job quickly.

The bottom line

The American Society for Training and Development conducted a study in 2000 that examined the training expenditures of 500 U.S. publicly traded firms. The study showed that firms in the top half of training expenditures had total stockholders' returns 86 percent higher than the 250 companies in the bottom half of training expenditures. Moreover, the top half outdid the S&P 500 (Standard and Poor's capitalization weighted index of 500 stocks) average return on investment by 46 percent. Companies in the lower half of training expenditures averaged returns 22 percent lower than the S&P 500 average.

These numbers suggest that given the rapid change in technology and business processes, a good business case can be made for smart training and learning processes in companies large and small. ❑

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PRACTICE IS ESSENCE OF SUCCESS!

Installing packages from source

Continued from page 91

When the prompt returns (and there are no errors), finish off with:

```
# make install
```

Test your new setup by starting Apache (type the following)

```
# /usr/local/apache/bin/apachectl start
```

If Apache starts without errors, you can now test your initial setup. Go to http://localhost/ using your Linux Netscape or Lynx browser. You should see the Apache test page, with a link at the bottom to the local Apache online documentation that gets installed as part of a default installation.

The Apache configuration files (the main one is httpd.conf) reside in /usr/local/apache/conf. The binaries reside in /usr/local/apache/bin and the main Web site is located in /usr/local/apache/htdocs. Log files are located in /usr/local/apache/logs.

Now let's swing over to PHP by typing:

```
# cd /usr/local/src/php-4.0.4pl1
```

As with Apache, PHP has a number of files and subdirectories located in this top-level directory, and it has the requisite INSTALL and README files.

The PHP configuration step references the Apache directory via relative pathing:

```
# ./configure \
> --with-mysql \
> --with-apache=../apache_1.3.19 \
> --enable-track-vars
```

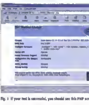

Fig. 1 If your test is successful, you should see this PHP screen.

We're configuring a very lean PHP here, with MySQL support but with no Oracle, PostgreSQL, or LDAP support. That's part of the point of compiling from source. You can control exactly what a package supports.

Now that PHP is configured it must be compiled:

```
# pwd
/usr/local/src/php-4.0.4pl1

# make
# make install
```

Once again, the compile cycle will look strange at first, but be patient and wait for it to finish (good time for a coffee break). When it's done, we need to repeat a bit of the work we did for Apache originally because we didn't include PHP the first time:

```
# cd ../apache_1.3.19/
```

```
# ./configure \
> --prefix=/usr/local/apache \
> --activate-module=src/modules/php4/libphp4.a

# make

#/usr/local/apache/bin/apachectl stop

# cp src/httpd /usr/local/apache/bin

# /usr/local/apache/bin/httpd -l
Compiled-in modules:
  http_core.c
  
  mod_php4.c
```

Notice that this time around we did not type make install. The make install option is only used the first time we install Apache. After running make to create a new binary, we then stopped the Apache server (apachectl stop), copied the new binary (httpd) to the Apache binary directory (/usr/local/apache/bin), then ran httpd with the -l flag to see which modules are compiled. There are several but the one we wanted to verify is mod_php4.c.

Now we just need to edit the Apache httpd.conf file to recognize PHP and we can then set up a test page:

```
# cd /usr/local/apache/conf
# vi httpd.conf
```

In vi or another editor uncomment the following lines by removing the hash mark (#):

```
AddType application/x-httpd-php .php
AddType application/x-httpd-php-source .phps
```

Then save the file and type:

```
# /usr/local/apache/bin/apachectl start
```

We also need to add that last startup command to /etc/rc.d/rc.local if we want Apache to start each time the system is rebooted.

Now the moment of truth! Create the following file, phptest.php, in the directory /usr/local/apache/htdocs.

```
<html>
<head>
<title>PHP Test</title>
<body>

<?php phpinfo() ?>

</body>
</html>
```

Then set your local Linux browser to http://localhost/phptest.php to see a deep screen of PHP info (see Fig. 1).

Nice job! This was a very simple Apache and PHP installation, but once you've nailed down the basics, adding more modules or adjusting the options is just more of the same. On this system, Apache and PHP can now be easily updated whenever you want, and the files located in your directory of choice. Moreover, you have the satisfaction of a job well done.

Now that you know how to install packages from source, you can just repeat as needed for any of the important packages on your system. ❑

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Three takes on Web's social impact

By Sean Carruthers

You may have thought the Internet was a fad back when you first heard about it, but it's becoming increasingly obvious that not only is it going to stick around for a while, it is profoundly changing the way we work, play and think about life. We recently received three trade paperbacks dealing with the subject, all from slightly different angles.

The Cluetrain Manifesto

Authors: Christopher Locke, Rick Levine, Doc Searls, and David Weinberger
Publisher: Perseus Publishing
http://www.perseuspublishing.com
ISBN: 0-7382-0431-5
Price: $20.95

Ever wish certain companies would just get a clue? Why not send them a copy of this book?

The Cluetrain Manifesto, which started as a Web site, was put together by four people who worked in the world of high tech in varying roles: Rick Levine was an Web architect for Sun Microsystems, Christopher Locke does Web consulting, Doc Searls founded a Silicon Valley ad agency, and David Weinberger shifted from philosophy into high-tech marketing.

With their combined experience, they decided to create *The Cluetrain Manifesto* to give some businesses a kick in the pants, and get others to pay attention to how the Internet is changing the way we do business, most importantly as customers (read: human beings).

In short, markets are conversations, according to the authors. In the early days, people had a one-to-one relationship with those who manufactured their goods—they wandered into the marketplace in the centre of town and asked questions directly of the farmer or the potter.

The Industrial Revolution took this direct communication out of the loop by making the actual craftspeople irrelevant to the idea of the "product"—people on the assembly line were interchangeable.

With the advent of the Internet, however, the conversation is starting up again, but now it's between one person and another. If someone wants information about your product or service, they'll use the Internet to ask for opinions from others who have purchased the product. Manufacturers, as the book points out, stay out of this conversation at their own peril.

The book is broken into several sections, each written by one or more of the various contributors. As befits its Web heritage, the book has an active layout. Columns shrink to accommodate sidebars featuring related text or rebuttals from one of the other writers—even this book is a conversation.

Also reflective of the background of the material, is the book's very casual tone: some readers may be put off by the slang and profanity that peppers the text.

If you let that put you off, however, you're missing the more important message of the book: you have to let go of conventional notions of how business is supposed to work if you don't want to be left behind in the Internet age.

While the full text of *The Cluetrain Manifesto* is not online, you can read the first chapter and the manifesto that inspired the book at http://www.cluetrain.com

Commonspace: Beyond Virtual Community

Authors: Mark Surman and Darren Wershler-Henry
Publisher: FT.com (Financial Times)
http://www.business-minds.com
ISBN: 0-13-089561-7
Price: $29.99

The Internet is a meeting place, where people and ideas come together. Instead of author Ayn Rand's everyone-for-themselves mentality that is so common in business, Torontonians Mark Surman and Darren Wershler-Henry attempt to show how you can use "the power of the collective" to both develop killer ideas and to capitalize on them.

If it sounds alien, that's the whole point. North American business is so locked into proprietary thinking that it's almost impossible to understand how you can make money by giving your ideas away.

At the same time, many individuals and companies are showing exactly how that can be done: from Netscape to Napster, from Richard M. Stallman (founder of the Free Software Project) to Eric S. Raymond (open source developer, hacker and author of the next book in this review). *Commonspace* is an attempt to take you through all of these aspects of this new "gift" economy.

From an informational perspective, it's clear the authors have done their homework and have been part of the community. There are plenty of good examples and it's all tied together fairly well. There are a few problems with the book, however.

First, it's written in a style that may not be a very good match with the people who could really learn something from it—while it has a sense of humour, it's also couched in hipper than thou slang that can be off-putting, and it's full of unnecessary profanity.

The tone is also somewhat self congratulatory. Examples taken from the authors' past experience often read more like a pat on the back than a truly informative anecdote. Lastly, the book has all the hallmarks of a rush job, with typographical and editing errors rendering some passages difficult to comprehend.

Get past these issues, and it's a fairly good read, with a good sense of humour (something sorely lacking in many other studies of the new Information Age) and a lot of good leads to helpful resources.

The book is unabashedly Linux-friendly, which probably explains the general style and tone of the book. Unfortunately, it may be preaching to the converted.

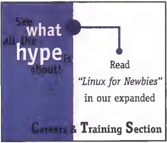
Though Surman and Wershler-Henry trumpet the promise of open source, it's somewhat ironic that they do not include the whole text of *Commonspace* online. However, you can read the first chapter at http://www.commonsgroup.com/commonspace/

The Cathedral and the Bazaar (Revised and Expanded)

Author: Eric S. Raymond
Publisher: O'Reilly
http://www.oreilly.com
ISBN: 0-596-00108-8
Price: $24.95

Originally released in 1999 and already considered a classic, *The Cathedral and the Bazaar* is a collection of writings by Eric S. Raymond, a long-time hacker (not to be confused with cracker) and co-developer of many pieces of commonly used software, like fetchmail and emacs. It has been updated and expanded in this new release.

Although the actual term is just a few years old now, the concept of "open source" software has been around for quite a while.



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FROM THE EDITOR

David Tanaka

THE CATHEDRAL & THE BAZAAR
MUSINGS ON LINUX AND OPEN SOURCE BY AN ACCIDENTAL REVOLUTIONARY
ERIC S. RAYMOND

Instead of developing software in a very closed and proper environment (also known as the "cathedral" style of development), Unix and Linux programmers have often collaborated with many other users, soliciting feedback on the code and its bugs before its official release (known as the "bazaar" style of development)

In this book Raymond describes this programming culture, and why open source development makes a lot more sense than a closed environment.

The Cathedral and Bazaar is the most technical, and consequently the most difficult to read of the three books reviewed here, Raymond assumes his readers either know the terms he's using or are smart enough to find out using their own resources In other words the book really isn't aimed at novices, who will quickly get lost.

For those who have a background in the computer world and programming culture, however the book is a straight shooting account of open source development, with plenty of useful and enlightening examples.

Each of these pieces originally appeared on Eric S Raymond's personal Web site (http://www.tuxedo.org/~esr), and updated versions of the pieces still appear at that location. This is open source in action—you can go and get the material for free at that Web site (or at the very least preview it to see if it's up your alley)

If you like it, you can purchase a copy and make sure Raymond gets paid Or you can pick up the hard copy if you want to read it on the bus The point is, the choice is not Raymond's, and not O Reilly's... it's yours ❑

New sounds from the old school

NY—We tend to link the phrases "classic" and "music" with the kind of rock lonk that used to roar out of paisley-colored guitars. But there was classical music long before Clapton was God (which seems to have been a temporary position anyway) and much of it is considerably less dusty than a box of dried-up Cream On New York public radio station WNYC announcer John Schaefer spins some of the hottest wax from the nouveau classical music scene every night at 11 p m EST And his New Sounds program is online. Schaefer's idea of classical music doesn't end at Holst. A recent program included works for solo guitar, guitar quartet, and even a guitar orchestra and it drew on styles ranging from classical guitar to traditional American fingerpicking to Jimi Hendrix. http://www.wnyc.org/new/music/newsounds/playlists/

Quick tips

Handy hints for Lotus 1-2-3

By Helen Bradley

Charting using two axes

Plot large and small data on a single Lotus chart by using two axes each with different scales Create your chart as a bar chart and select one of the bars or columns for the smaller data values right click and choose Series Properties. From the Options tab, select the data range you want to change from the drop-down list and enable the Plot Against Second Y axis checkbox for this series To alter the plot type—for example to create a line over a bar chart—choose the required option from the Mixed Type list box and click OK

Add an image to a chart

Add a picture behind a Lotus chart by first opening the image in a graphics program selecting it choosing Edit, then Copy to copy it to the Windows Clipboard Now return to Lotus click the desired chart to select it, then choose Chart, Plot, select the Options tab, and choose the Paste Picture option to insert your image

Replace bars with images

Any picture on the Windows Clipboard can be used to fill a bar stacked bar or 100 percent stacked bar chart for a wonderful visual effect. To do this copy an image to the clipboard and click the desired chart to select it. Choose Chart, Series, select the Pictures tab then from the dropdown list choose the series you want to add the picture to and click Paste Picture. Experiment with the Picture size options to get a satisfactory result

Charting dispersed data

To plot data that isn't side by side, hold the Control key as you select each individual block or row of data to chart, then prepare your chart as you would any other

Pie of a pie chart

Lotus 1 2 3 offers a neat Multiple Pie Charts option that allows you to plot more than one data series at a time so each is displayed as a separate pie chart within the one chart area Check out the options in the Chart Type dialogue under Pie

Colour me purple

Change the colour of a worksheet's tab by selecting Sheet Sheet Properties, select the Basics tab, and choose a colour from the Tab Colour drop-down list. Each tab can have its own colour, which will make it easier to identify them Remember too, that you can replace a tab's letter with a name by double-clicking its letter and typing in the desired name.

Quick months

Create a workbook full of tabs for each month of the year by double-clicking tab A and naming it January Select Create, then Sheet, and in the Number Of Sheets list-box select 11 and the After Current Sheet option button. When you click OK it will add 11 more sheets (one for each month) and correctly label them for you You can use this process to automatically name a series of sheets based on any Lotus 1 2-3 SmartFill list.

Smart SmartFill

If you regularly create a list of employee names office locations budget items, etc. in a worksheet or as sheet names, you can get Lotus to type these for you automatically by creating a SmartFill list. Select File User Setup SmartFill Setup then click the New List button

In the New List Name input area type a name for the list and click OK Click Add Item to add to your list and continue until you have entered all required items Click Done when you are finished.

To use your SmartFill list, type the first item into a cell, select the cell and position the mouse pointer over the edge of the cell until it appears as a large arrow with small double arrows below it and drag it over the cells to fill with the list items

Format multiple sheets

Quickly apply the same formatting to multiple sheets by grouping them together From the menu select Sheet, Group Sheets and in the dialogue select the First Sheet of Group and Last Sheet of Group Click in the Copy Styles From This Sheet box click the sheet containing any formatting you want to apply to all sheets and click OK.

Any formatting on the sheet you selected will now be copied to the other sheets and any formatting you create now will appear on all grouped sheets. Select Sheet, then Clear Sheet Group to remove the grouping

Numbers as text

Occasionally you'll want to enter a number as text—for example a phone number like (451) 555 5555 or a part number with leading zeros like 00565 If you type them as you want them to appear Lotus won't accept it unless it is preceded by a single apostrophe, as in '00565 ❑

Helen Bradley specializes in writing hands-on tutorials. Her columns appear regularly in a number of publications in Australia Canada, the U.K., and the U.S. Contact Helen at helen@helenbradley.com.

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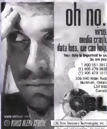

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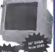

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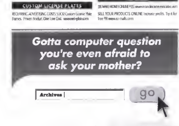
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PHP Pocket Reference proves that you *can* be too thin

By Keith Schengili-Roberts

If you create dynamic Web sites, chances are you've heard of PHP. Like ASP, JSP and ColdFusion, it is a language that allows Webmasters to embed processing and input tasks directly into Web pages, instead of through a CGI script.

What makes PHP different from the other options is that it is both open source and cross-platform compatible.

PHP Pocket Reference
Author: Rasmus Lerdorf
Publisher: O'Reilly & Associates
Tel. 800-998-9938 http://www.oreilly.com
ISBN: 1-56592-769-9
Softcover: 114 pages, 2000
Price: $14.95
Rating:
Information content: * 1/2
Readability: **
Intended for: Intermediate
Overall: **

In terms of PHP fundamentals, you can't get much more concise than this. Written by the creator of PHP, Rasmus Lerdorf, this slim volume outlines the basic syntax and structure of PHP, and includes a mini tutorial on using it.

This is followed by an extensive listing of standard PHP functions, accompanied by brief descriptions of how they work.

Unfortunately, there are several knocks against this book. It was published prior to the release of PHP4, the most recent version of PHP, so it is not as up-to-date as it could be.

While it would have added some bulk, the inclusion of a line or two of sample code after a description (some descriptions for the functions are in fact shorter than the functions themselves) would make this text much more useful.

However, the worst part of the book is that there is no table of contents, and—more damning—no index.

This begs the question of how handy this slim volume would be since it is hard to find the function you are trying to look up.

In short, this is an OK reference for someone already familiar with programming fundamentals. However, if you have a good Internet connection, you will likely get more out of the full manual than can be found at http://www.php.net.

Look for a more comprehensive PHP book from O'Reilly later this year. ❑

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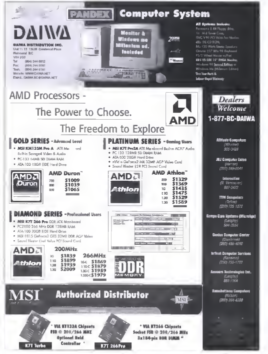
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